59 ANSWER 5 OF 20 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:152970 HCAPLUS
DN 134:201569
TI Nanoporous silica treated with **siloxane** polymers for ULSI applications
IN Rutherford, Nicole; Ramos, Teresa; Wu, Hui-jung; Katsanes, Ron; Drage, James
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 43 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2001015214 | A1 | 20010301 | WO 2000-US23191 | 20000823 |
| | US 6318124 | B1 | 20011120 | US 1999-379484 | 19990823 |
| PRAI | US 1999-379484 | A | 19990823 | | |

AB A surface-coated nanoporous SiO2 dielec. film that was prepd. by a process comprising the steps of forming a nanoporous SiO2 dielec. coating on a substrate, and coating the formed nanoporous SiO2 dielec. film with a coating compn. comprising a polymer precursor, under conditions effective to form a strength-enhancing and/or **hydrophobicity** enhancing layer on the treated nanoporous SiO2 dielec. film.

IT **7631-86-9**, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(nanoporous silica dielec. film treated with **siloxane** polymers for ULSI applications)

RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

**PCT** WORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : H01L 21/3105, C01B 33/159 — A1

(11) International Publication Number: **WO 00/44036**

(43) International Publication Date: 27 July 2000 (27.07.00)

(21) International Application Number: PCT/US00/01626

(22) International Filing Date: 26 January 2000 (26.01.00)

(30) Priority Data:

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|---|---|---|
| 60/117,248 | 26 January 1999 (26.01.99) | US |
| Not furnished | 19 January 2000 (19.01.00) | US |


(71) Applicant: ALLIEDSIGNAL INC. [US/US]; 101 Columbia Road, P.O. Box 2245, Morristown, NJ 07962–2245 (US).

(72) Inventors: WU, Hui–Jung; 38770 Buckboard Common, Fremont, CA 94536 (US). DRAGE, James, S.; 34906 Seal Rock Terrace, Fremont, CA 94555 (US).

(74) Agents: CRISS, Roger, H. et al.; AlliedSignal Inc., (Law Dept., Attn: A. Olinger), 101 Columbia Road, P.O. Box 2245, Morristown, NJ 07962–2245 (US).

(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

**Published**
*With international search report.*

(54) Title: USE OF MULTIFUNCTIONAL SI-BASED OLIGOMER/POLYMER FOR THE SURFACE MODIFICATION OF NANOPOROUS SILICA FILMS

(57) Abstract

A process for treating a silica film on a substrate, which includes reacting a suitable silica film with an effective amount of a surface modification agent, wherein the silica film is present on a substrate. The reaction is conducted under suitable conditions and for a period of time sufficient for the surface modification agent to form a hydrophobic coating on the film. The surface modification agent includes at least one type of oligomer or polymer reactive with silanols on the silica film. Dielectric films and integrated circuits including such films are also disclosed.

# INTERNATIONAL SEARCH REPORT

Int. ional Application No
PCT/US 00/01626

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 H01L21/3105 C01B33/159

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C01B H01L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | EP 0 849 796 A (TEXAS INSTRUMENTS INC)<br>24 June 1998 (1998-06-24) | 20-28 |
| A | column 1<br><br>column 4 | 1,11,15,<br>16,18,19 |
| X | EP 0 688 052 A (TEXAS INSTRUMENTS INC)<br>20 December 1995 (1995-12-20) | 20-28 |
| A | page 3<br><br>page 5, line 58 -page 6, line 1 | 1,3,11,<br>15,16,<br>18,19 |
| X | US 4 072 796 A (REINHARDT HELMUT ET AL)<br>7 February 1978 (1978-02-07)<br>column 3 | 29 |

-/--

[X] Further documents are listed in the continuation of box C.

[X] Patent family members are listed in annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

| Date of the actual completion of the international search | Date of mailing of the international search report |
|---|---|
| 14 April 2000 | 02/05/2000 |

| Name and mailing address of the ISA | Authorized officer |
|---|---|
| European Patent Office, P.B. 5818 Patentlaan 2<br>NL – 2280 HV Rijswijk<br>Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,<br>Fax: (+31-70) 340-3016 | Szarowski, A |

2

Form PCT/ISA/210 (second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Inta ional Application No
PCT/US 00/01626

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication,where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| A | US 4 885 262 A (TING CHIU H ET AL) 5 December 1989 (1989-12-05) column 6 | |
| A | US 5 069 816 A (DESANTIS DOMINICK A ET AL) 3 December 1991 (1991-12-03) column 6, line 1 - line 21 column 15 | |

2

Form PCT/ISA/210 (continuation of second sheet) (July 1992)

# INTERNATIONAL SEARCH REPORT

Information on patent family members

Int. Ional Application No
PCT/US 00/01626

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| EP 0849796 A | 24-06-1998 | JP 10178006 A | 30-06-1998 |
| EP 0688052 A | 20-12-1995 | US 5488015 A | 30-01-1996 |
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| | | JP 51014900 A | 05-02-1976 |
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| US 5069816 A | 03-12-1991 | NONE | |

Form PCT/ISA/210 (patent family annex) (July 1992)

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 0 849 796 A2

# (12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**24.06.1998 Bulletin 1998/26**

(51) Int Cl.[6]: **H01L 23/532**

(21) Application number: **97310137.1**

(22) Date of filing: **16.12.1997**

(84) Designated Contracting States:
**AT BE CH DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE**
Designated Extension States:
**AL LT LV MK RO SI**

(30) Priority: **17.12.1996 US 34423 P**

(71) Applicant: **TEXAS INSTRUMENTS INCORPORATED**
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(72) Inventors:
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  **Dallas, Texas 75243 (US)**
- **Yamanaka, Stacey**
  **Dallas, Texas 75240 (US)**
- **List, R Scott**
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(74) Representative: **Darby, David Thomas et al**
**Abel & Imray**
**Northumberland House**
**303-306 High Holborn**
**London WC1V 7LH (GB)**

## (54) Improvements in or relating to integrated circuits

(57) An integrated circuit with an intermetal level dielectric (IMD) including an organic-silica hybrid (110) and located between metal lines (104).

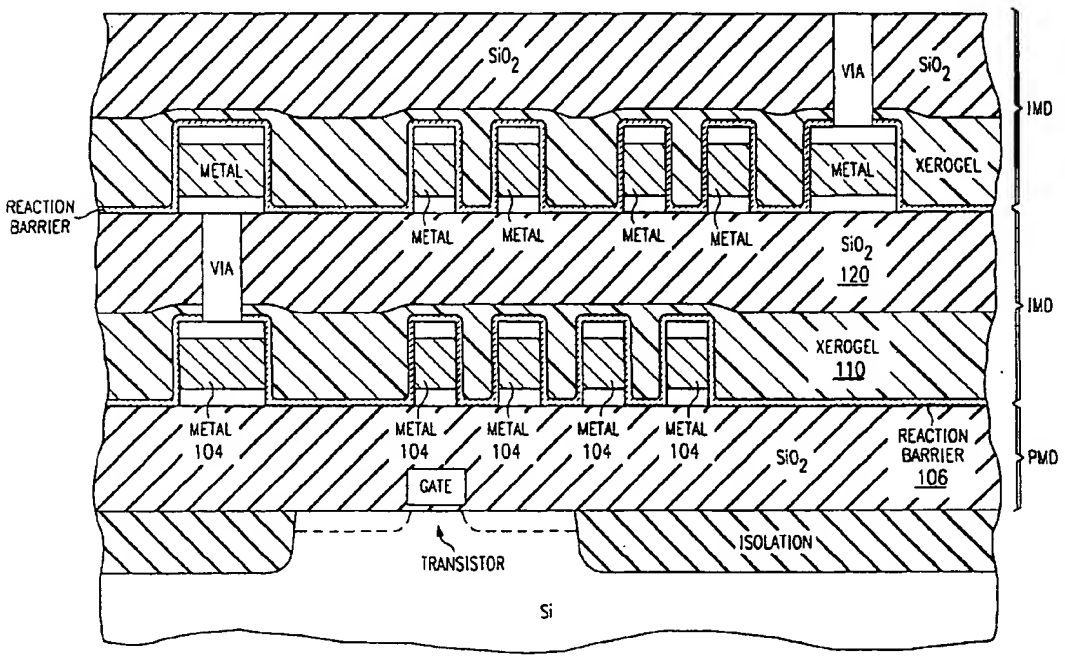


Figure 3.

EP 0 849 796 A2

Printed by Jouve, 75001 PARIS (FR)

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 688 052 A2**

(12) # EUROPEAN PATENT APPLICATION

(21) Application number: **95107519.1**

(51) Int. Cl.[6]: **H01L 23/522**, H01L 23/532

(22) Date of filing: **17.05.95**

(30) Priority: **20.05.94 US 246432**

(43) Date of publication of application:
**20.12.95 Bulletin 95/51**

(84) Designated Contracting States:
**DE FR GB IT NL**

(71) Applicant: **TEXAS INSTRUMENTS INCORPORATED**
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(72) Inventor: **Havemann, Robert H.**
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Inventor: **Gnade, Bruce E.**
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**Rowlett, TX 75088 (US)**
Inventor: **Cho, Chih-Chen**
**2010 North Cliff**
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(74) Representative: **Schwepfinger, Karl-Heinz, Dipl.-Ing.**
**Prinz & Partner,**
**Manzingerweg 7**
**D-81241 München (DE)**

(54) **Improvements in or relating to fabrication of semiconductor devices**

(57) This invention provides a semiconductor device and process for making the same with dramatically reduced capacitance between adjacent conductors and an interlayer dielectric construction which emphasizes mechanical strength, etch compatibility, and good heat transfer. This process can include applying a solution between conductors **24**, and then gelling, surface modifying, and drying the solution to form an extremely porous dielectric layer **28**. A non-porous dielectric layer **30** may be formed over porous layer **28**, which may complete an interlayer dielectric and provide mechanical strength, heat transfer, and a solid layer for via etch. A novel process for creating the porous dielectric layer is disclosed, which can be completed at vacuum or ambient pressures, yet results in porosity, pore size, and shrinkage of the dielectric during drying comparable to that previously attainable only by drying gels at supercritical pressure.

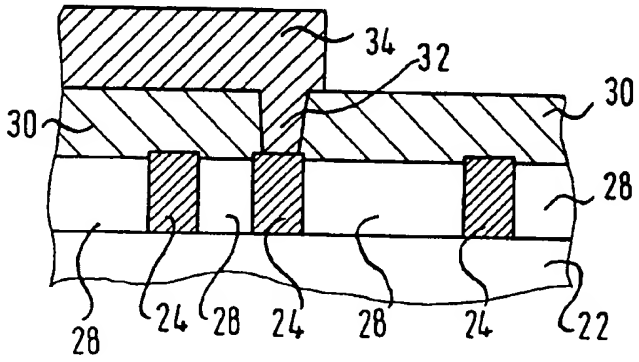


Fig.3D

EP 0 688 052 A2

US005488015A

# United States Patent [19]

Havemann et al.

[11] Patent Number: 5,488,015

[45] Date of Patent: Jan. 30, 1996

[54] METHOD OF MAKING AN INTERCONNECT STRUCTURE WITH AN INTEGRATED LOW DENSITY DIELECTRIC

[75] Inventors: **Robert H. Havemann**, Garland; **Shin-Puu Jeng**, Plano; **Bruce E. Gnade**, Rowlett; **Chih-Chen Cho**, Richardson, all of Tex.

[73] Assignee: **Texas Instruments Incorporated**, Dallas, Tex.

[21] Appl. No.: **246,432**

[22] Filed: **May 20, 1994**

[51] **Int. Cl.**[6] ..... **H01L 21/441**; H01L 21/469

[52] **U.S. Cl.** ..... **437/195**; 437/231; 437/238; 437/978; 148/DIG. 43; 148/DIG. 118

[58] **Field of Search** ..... 437/235, 238, 437/978, 231, 195; 148/DIG. 43, DIG. 117, DIG. 118

[56] **References Cited**

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| 4,141,055 | 2/1979 | Berry et al. | 361/410 |
| 4,619,839 | 10/1986 | Lehrer | 437/231 |
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| 5,079,188 | 1/1992 | Kawai | 437/231 |
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| 5,270,267 | 12/1993 | Ouellet | 437/231 |
| 5,352,630 | 10/1994 | Kim et al. | 437/231 |
| 5,354,713 | 10/1994 | Kim et al. | 437/235 |

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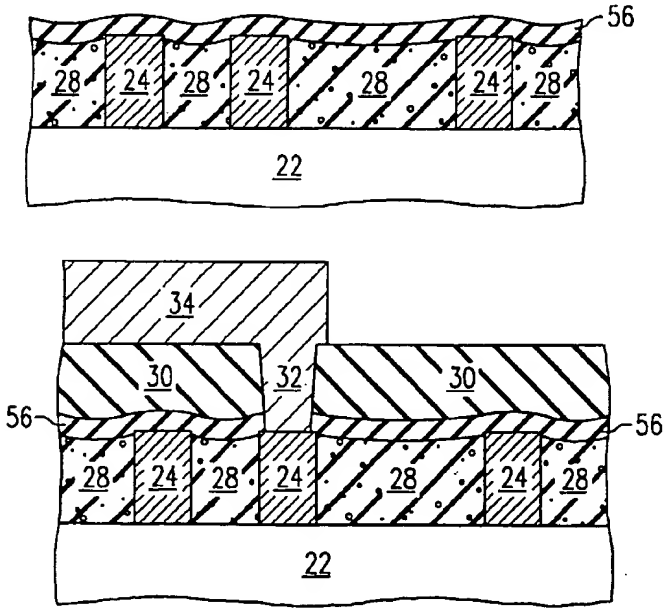
*Primary Examiner*—Brian E. Hearn
*Assistant Examiner*—Leon Radomsky
*Attorney, Agent, or Firm*—Richard A. Stoltz; Richard L. Donaldson; William E. Hiller

[57] **ABSTRACT**

This invention provides a semiconductor device and process for making the same with dramatically reduced capacitance between adjacent conductors and an interlayer dielectric construction which emphasizes mechanical strength, etch compatibility, and good heat transfer. This process can include applying a solution between conductors **24**, and then gelling, surface modifying, and drying the solution to form an extremely porous dielectric layer **28**. A non-porous dielectric layer **30** may be formed over porous layer **28**, which may complete an interlayer dielectric and provide mechanical strength, heat transfer, and a solid layer for via etch. A novel process for creating the porous dielectric layer is disclosed, which can be completed at vacuum or ambient pressures, yet results in porosity, pore size, and shrinkage of the dielectric during drying comparable to that previously attainable only by drying gels at supercritical pressure.

**9 Claims, 6 Drawing Sheets**



US005747880A

# United States Patent [19]

Havemann et al.

[11] Patent Number: 5,747,880

[45] Date of Patent: May 5, 1998

[54] **INTERCONNECT STRUCTURE WITH AN INTEGRATED LOW DENSITY DIELECTRIC**

[75] Inventors: **Robert H. Havemann**, Garland; **Shin-Puu Jeng**, Plano; **Bruce E. Gnade**, Rowlett; **Chih-Chen Cho**, Richardson, all of Tex.

[73] Assignee: **Texas Instruments Incorporated**, Dallas, Tex.

[21] Appl. No.: **751,901**

[22] Filed: **Nov. 18, 1996**

**Related U.S. Application Data**

[60] Continuation of Ser. No. 473,840, Jun. 7, 1995, abandoned, which is a division of Ser. No. 246,432, May 20, 1994, Pat. No. 5,488,015.

[51] **Int. Cl.**[6] ..... **H01L 21/47**; H01L 21/471; H01L 23/532

[52] **U.S. Cl.** ..... **257/759**; 257/760

[58] **Field of Search** ..... 257/759, 760, 257/750, 758, 752, 637, 638, 639–644

[56] **References Cited**

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| 5,023,208 | 6/1991 | Pope et al. | 501/12 |
| 5,079,188 | 1/1992 | Kawai | 437/195 |
| 5,103,288 | 4/1992 | Sakamoto et al. | 357/71 |
| 5,104,828 | 4/1992 | Morimoto et al. | 437/225 |
| 5,155,576 | 10/1992 | Mizushima | 357/71 |
| 5,270,267 | 12/1993 | Ouellet | 437/231 |
| 5,352,630 | 10/1994 | Kim et al. | 437/195 |
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| 0059815 | 3/1989 | Japan . | |
| 0152656 | 5/1992 | Japan . | |
| 0084787 | 3/1994 | Japan . | |
| 0097163 | 4/1994 | Japan . | |
| 2 266 181 | 10/1993 | United Kingdom . | |

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U.S. Serial No. 08/137,658, Filed Oct. 15, 1993.

U.S. Serial No. 08/250,137, Filed May 27, 1994.

Silicon Processing for The VLSI Era, vol. II: Process Integration, Stanley Wolf PhD, pp. 222–239.

U.S. Serial No. 08/234,100, Filed Apr. 28, 1994.

U.S. Serial No. 08/234,099, Filed Apr. 28, 1994.

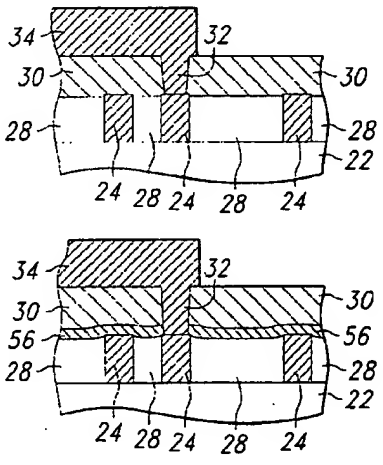
*Primary Examiner*—Wael Fahmy

*Attorney, Agent, or Firm*—James E. Harris; James C. Kesterson; Richard L. Donaldson

[57] **ABSTRACT**

This invention provides a semiconductor device and process for making the same with dramatically reduced capacitance between adjacent conductors and an interlayer dielectric construction which emphasizes mechanical strength, etch compatibility, and good heat transfer. This process can include applying a solution between conductors **24**, and then gelling, surface modifying, and drying the solution to form an extremely porous dielectric layer **28**. A non-porous dielectric layer **30** may be formed over porous layer **28**, which may complete an interlayer dielectric and provide mechanical strength, heat transfer, and a solid layer for via etch. A novel process for creating the porous dielectric layer is disclosed, which can be completed at vacuum or ambient pressures, yet results in porosity, pore size, and shrinkage of the dielectric during drying comparable to that previously attainable only by drying gels at supercritical pressure.

**12 Claims, 6 Drawing Sheets**



# United States Patent [19]

**Reinhardt et al.**

[11] **4,072,796**

[45] **Feb. 7, 1978**


[54] **PROCESS FOR HYDROPHOBIZATION OF FINELY DIVIDED SILICA AND SILICATES USING PREPOLYCONDENSED ORGANOSILANE**


[75] Inventors: **Helmut Reinhardt, Rodenkirchen; Karl Trebinger; Gottfried Kallrath,** both of Wesseling, all of Germany

[73] Assignee: **Deutsche Gold- und Silber-Scheideanstalt vormals Roessler,** Frankfurt, Germany



[21] Appl. No.: **581,890**

[22] Filed: **May 29, 1975**

[30] **Foreign Application Priority Data**

July 25, 1974 Germany ..... 2435860

[51] **Int. Cl.²** ..... **B32B 17/00; C01B 33/18**

[52] **U.S. Cl.** ..... **428/405;** 427/221; 260/42.15

[58] **Field of Search** ..... 427/220, 221, 387; 428/405; 260/375 B, 42.15



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| 3,920,865 | 11/1975 | Laufer et al. | 427/387 |

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| 1,074,559 | 2/1960 | Germany | 427/220 |
| 705,261 | 3/1954 | United Kingdom | 427/387 |



*Primary Examiner*—Harry J. Gwinnell
*Assistant Examiner*—S. Silverberg
*Attorney, Agent, or Firm*—Cushman, Darby & Cushman



[57] **ABSTRACT**

Finely divided hydrophobic silica and silicates are prepared by precipitating of alkali silicate solutions with mineral acids or metal salt solutions and treated with organohalosilanes. To the acid precipitation suspension recovered in known manner there is added as a hydrophobizing agent an organohalosilane, preferably at about 50° to 90° C., the precipitated product filtered, washed and dried and there subjected to a temperature of 300° to 400° C. There is used as the organohalosilane a prepolycondensed organohalosilane or a mixture of prepolycondensed organohalosilanes.


**14 Claims, No Drawings**

L61 ANSWER 3 OF 5 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:513925 HCAPLUS
DN 133:128664
TI Use of multifunctional Si-based oligomer/polymer for the surface modification of **nanoporous silica** films for integrated-circuit fabrication
IN Wu, Hui-Jung; Drage, James S.
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA English

09/841,453 PATENT FAMILY

FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2000044036 | A1 | 20000727 | WO 2000-US1626 | 20000126 |
| | EP 1153426 | A1 | 20011114 | EP 2000-904495 | 20000126 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| | US 2002001973 | A1 | 20020103 | US 2001-841453 | 20010424 |
| PRAI | US 1999-117248P | P | 19990126 | | |
| | US 2000-488075 | A3 | 20000120 | | |
| | WO 2000-US1626 | W | 20000126 | | |

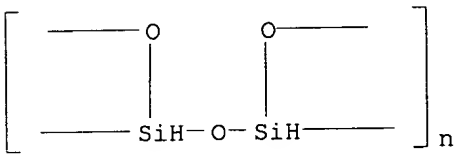
AB A process for treating a SiO2 film on a substrate, which includes reacting a suitable SiO2 film with an effective amt. of a surface modification agent, wherein the SiO2 film is present on a substrate. The reaction is conducted under suitable conditions and for a period of time sufficient for the surface modification agent to form a **hydrophobic** coating on the film. The surface modification agent includes at least one type of oligomer or polymer reactive with silanols on the SiO2 film. Dielec. films and integrated circuits including such films are also disclosed.

L61 ANSWER 4 OF 5 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:161579 HCAPLUS
DN 132:201837
TI Silane-based **nanoporous silica** thin films and their preparation
IN Hendricks, Neil; Smith, Douglas M.; Ramos, Teresa; Wallace, Stephen; Drage, Jim
PA Alliedsignal Inc., USA
SO PCT Int. Appl., 47 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

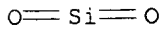
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2000013222 | A1 | 20000309 | WO 1999-US19357 | 19990824 |
| | AU 9955844 | A1 | 20000321 | AU 1999-55844 | 19990824 |
| PRAI | US 1998-98068P | P | 19980827 | | |
| | WO 1999-US19357 | W | 19990824 | | |

AB Improved processes for forming **hydrophobic** nanoporous dielec. coatings on substrates involve forming a reaction mixt. that combines .gtoreq.1 mono-, di-, or trifunctional precursor with .gtoreq.1 tetrafunctional precursor, recovering the reaction product, and then depositing the reaction product on a suitable substrate, followed by gelling of the deposited film. Precursors include alkoxy, acetoxy, and halogen leaving groups. Optional processes to enhance the **hydrophobicity** of a **nanoporous SiO2** film are also provided, as well as improved **nanoporous SiO2** films, coated substrates, and integrated circuits prepd. by the new processes.

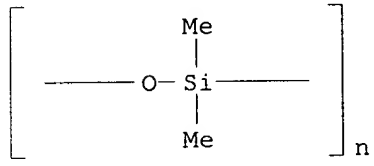
IT **153315-81-2**, Silanetriol homopolymer, ladder sru
RL: RCT (Reactant); RACT (Reactant or reagent)
(in prepn. of silane-based **nanoporous silica** thin films)
RN 153315-81-2 HCAPLUS
CN Poly[1,3:1,3-disiloxanediylidene-1,3-bis(oxy)] (9CI) (CA INDEX NAME)



L49 ANSWER 39 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1988:474421 HCAPLUS
DN 109:74421
TI Influence of the chemical nature of Aerosil **surface** on its interaction with **poly(dimethylsiloxane)**
AU Litvinov, V. M.; Wobst, M.; Reichert, D.; Schneider, H.; Zhdanov, A. A.
CS Inst. Synth. Polym., Moscow, 117333, USSR
SO Acta Polym. (1988), 39(5), 243-8
CODEN: ACPODY; ISSN: 0323-7648
DT Journal
LA German
AB The mol. motions in **poly(hexamethylcyclotrisiloxane)** composites with **SiO2** contg. adsorbed water, **hydrophobic** groups, and hydrophilic groups on the **surface** were studied. The mobility of the adsorbed polymer chains was restricted and depended on the nature of the **SiO2 surface**. The fast reorientational motions of unadsorbed chains were similar to those in the unfilled polymer, but the slow diffusional motions were limited by numerous topol. restrictions.
IT **7631-86-9, Silica**, properties
RL: PRP (Properties)
(di-Me **siloxane** adsorbed on Aerosil, mol. motions of, **silica surface** treatment effect on)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **9016-00-6**
RL: USES (Uses)
(mol. motions of **silica**-adsorbed, **silica surface** treatment effect on)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



L59 ANSWER 11 OF 20 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:720555 HCAPLUS
DN 127:364522
TI Selective Deposition of Conducting Polymers on **Hydroxyl** -Terminated Surfaces with Printed Monolayers of **Alkylsiloxanes** as Templates
AU Huang, Zheyuan; Wang, Pen-Cheng; MacDiarmid, Alan G.; Xia, Younan; Whitesides, George
CS Department of Chemistry, University of Pennsylvania, Philadelphia, PA, 19104, USA
SO Langmuir (1997), 13(24), 6480-6484
CODEN: LANGD5; ISSN: 0743-7463
PB American Chemical Society
DT Journal
LA English
AB This paper describes the use of patterned self-assembled monolayers (SAMs) in area-selective deposition of conducting polymers (polypyrrole and polyaniline) on insulating, **hydroxyl**-terminated surfaces such as Si/SiO2 and glass. Patterned SAMs of **octadecylsiloxane** were generated on the **hydroxyl**-terminated surfaces using microcontact printing; they defined and directed the deposition of conducting polymers. The rate of deposition on the **hydrophobic** surface is higher than that on the hydrophilic surface: immersion of a substrate patterned with a Me-terminated SAM in an appropriate aq. polymn. bath produced a pos. pattern of the conducting polymer on the surface. The conducting polymer deposited on the **hydrophobic** region of a surface completely covered by the polymer could be readily removed by transferring it to adhesive tape to form a pos. pattern on the tape, leaving a neg. pattern on the surface of the substrate. The conducting polymer deposited on the **hydrophobic** surface had a more extended conformation, and thus a higher cond. (approx. orders of magnitude in difference), than that formed on the hydrophilic surface. The smallest features of conducting polymers generated using these procedures were .apprx.2 .mu.m in lateral dimension. The edge roughness of these patterns was .apprx.0.5 .mu.m. These patterned microstructures of conducting polymers were conductive; they were used as electrodes in display devices based on polymer dispersed liq. crystals.
IT **7440-21-3**, Silicon, processes **7631-86-9**, Silica, processes
RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(selective deposition of conducting polymers on **hydroxyl** -terminated surfaces with printed monolayers of **alkylsiloxanes** as templates)
RN 7440-21-3 HCAPLUS
CN Silicon (7CI, 8CI, 9CI) (CA INDEX NAME)

Si

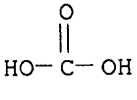
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L34 ANSWER 1 OF 3 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:297345 HCAPLUS
DN 126:279681
TI Production of suspensions with hydrophobic surface by mixing with alkali metal hydroxide or carbonate and treatment with organic silicon compounds
IN Smirnov, Aleksandr V.; Golipad, Petr N.; Orlov, Oleg G.
PA Smirnov, Aleksandr Vitalevich, Russia; Orlov, Oleg Georgievich
SO Russ.
From: Izobreteniya 1996, (25), 166.
CODEN: RUXXE7
DT Patent
LA Russian
IC ICM C01B033-18
CC 48-11 (Unit Operations and Processes)
FAN.CNT 1

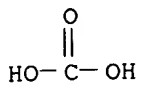
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| RU 2066297 | C1 | 19960910 | RU 1993-13055 | 19930316 |

PI RU 2066297 C1 19960910
AB Title only translated.
ST suspension hydrophobic surface prepn
IT **Polysiloxanes**, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in prodn. of suspensions with hydrophobic surface)
IT Cement (construction material)
Suspensions
(prodn. of suspensions with hydrophobic surface by mixing with alkali metal hydroxide or carbonate and treatment with org. silicon compds.)
IT Asbestos
Mica-group minerals, processes
Oxides (inorganic), processes
Perlite
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(prodn. of suspensions with hydrophobic surface by mixing with alkali metal hydroxide or carbonate and treatment with org. silicon compds.)
IT **497-19-8**, Sodium carbonate, uses **584-08-7**, Potassium carbonate **1310-58-3**, Potassium hydroxide, uses **1310-73-2**, Sodium hydroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in prodn. of suspensions with hydrophobic surface)
IT **7631-86-9**, Aerosil, processes **7782-42-5**, Graphite, processes **14807-96-6**, Talc, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(prodn. of suspensions with **hydrophobic surface** by mixing with alkali metal **hydroxide** or carbonate and treatment with org. silicon compds.)
IT **497-19-8**, Sodium carbonate, uses **584-08-7**, Potassium carbonate **1310-58-3**, Potassium hydroxide, uses **1310-73-2**, Sodium hydroxide, uses
RL: NUU (Other use, unclassified); USES (Uses)
(in prodn. of suspensions with hydrophobic surface)
RN 497-19-8 HCAPLUS
CN Carbonic acid disodium salt (8CI, 9CI) (CA INDEX NAME)



●2 Na

RN 584-08-7 HCAPLUS
CN Carbonic acid, dipotassium salt (8CI, 9CI) (CA INDEX NAME)



●2 K

RN 1310-58-3 HCAPLUS
CN Potassium hydroxide (K(OH)) (9CI) (CA INDEX NAME)

K— OH

RN 1310-73-2 HCAPLUS
CN Sodium hydroxide (Na(OH)) (9CI) (CA INDEX NAME)

Na— OH

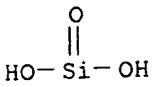
IT **7631-86-9**, Aerosil, processes **7782-42-5**, Graphite, processes **14807-96-6**, Talc, processes
RL: PEP (Physical, engineering or chemical process); PROC (Process)
(prodn. of suspensions with **hydrophobic surface** by mixing with alkali metal **hydroxide** or carbonate and treatment with org. silicon compds.)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

O═ Si═ O

RN 7782-42-5 HCAPLUS
CN Graphite (8CI, 9CI) (CA INDEX NAME)

C

RN 14807-96-6 HCAPLUS
CN Talc (Mg3H2(SiO3)4) (9CI) (CA INDEX NAME)

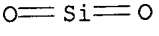


● 3/4 Mg

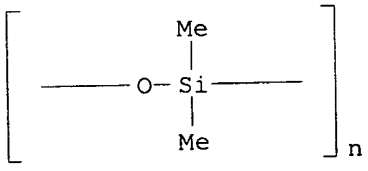
L49 ANSWER 2 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:307912 HCAPLUS
DN 136:295569
TI Method of preparing **hydrophobic** organophilic **silica** by modification with alkoxysilanes
IN Graifer, V. I.; Kotel'nikov, V. A.
PA Aktsionernoe Obshchestvo "Rossiiskaya Innovatsionnaya Toplivno-Energeticheskaya Kompaniya", Russia
SO Russ., No pp. given
CODEN: RUXXE7
DT Patent
LA Russian
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| RU 2152967 | C1 | 20000720 | RU 1999-109446 | 19990427 |

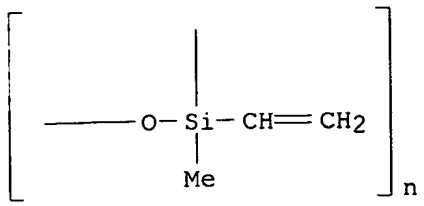
OS MARPAT 136:295569
AB A method is described of prepg. **hydrophobic** organophilic **silica**. Method comprises chem. modification of **silica surface** during mech. agitation and at elevated temp. Modification is carried out by using compds. of general formula R4-nSiR'n or R'4Si or R4-nSiHalnR"n-m wherein n is 1-3; m is 1-2; R is H, Me, Et, Cl is Me, Pr, phenyl; R' is OCH3OC2H5 Hal is Cl, Br or I: R'' is vinyl, allyl, methoxy, ethoxy. Original silica is subjected to hydroxylation with water vapor. Modification with compds. of formula: R4-nSiR'n or R'4Si is carried out in the presence of volatile acids. The invention provides a wider range of modifiers which make it possible to carry out chem. grafting of hydrocarbon, radicals and polymn. of compds. in **surface layer**.
IT **7631-86-9, Silica**, uses **9016-00-6**, Poly[oxy(dimethylsilylene)] **28323-46-8**, Poly[oxy(ethenylmethylsilylene)]
RL: TEM (Technical or engineered material use); USES (Uses)
(method of prepg. **hydrophobic** organophilic **silica** by modification with alkoxysilanes)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



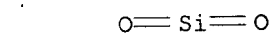
RN 28323-46-8 HCAPLUS
CN Poly[oxy(ethenylmethylsilylene)] (9CI) (CA INDEX NAME)



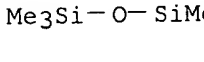
L49 ANSWER 13 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:537962 HCAPLUS
DN 131:158411
TI Process for making **hydrophobic silica** gel with reduced **surface** area under neutral conditions
IN Burns, Gary Thomas; Deng, Qin; Hahn, James Richard; Reese, Clifford Carlton
PA Dow Corning Corp., USA
SO U.S., 7 pp., Cont. of U. S. Ser. No. 806,002, abandoned.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 2

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5942590 | A | 19990824 | US 1998-22282 | 19980211 |
| | ES 2165147 | T3 | 20020301 | ES 1998-907514 | 19980218 |
| PRAI | US 1997-806002 | B2 | 19970224 | | |

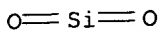
OS MARPAT 131:158411
AB The title method comprises two steps, where in the first step the pH of a mixt. comprising a silica hydrosol and colloidal silica is adjusted with a base to within a range of pH 3-7 to facilitate formation of a silica hydrogel having incorporated therein colloidal silica. In the second step the silica hydrogel is contacted with an organosilicon compd. in the presence of a catalytic amt. of a strong acid to effect **hydrophobing** of the **silica** hydrogel to form a **hydrophobic silica** gel having a **surface** area of 100-450 m2/g in the dry state. In a preferred process the **hydrophobic silica** gel is contacted with a sufficient quantity of a water-immiscible org. solvent to convert the **hydrophobic silica** hydrogel **into** a **hydrophobic silica** organogel. A water sol. compd. of cerium or iron may be added during conduct of the second step to improve heat stability of the **hydrophobic silica** gel.
IT **7631-86-9**, LudoxSM, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(colloidal; process for making **hydrophobic silica** gel with reduced **surface** area under neutral conditions)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **107-46-0DP, Hexamethyldisiloxane**, reaction products with **silica 7631-86-9DP, Silica**, reaction products with silanes or **siloxanes**, preparation
RL: IMF (Industrial manufacture); PREP (Preparation)
(process for making **hydrophobic silica** gel with reduced **surface** area under neutral conditions)
RN 107-46-0 HCAPLUS
CN Disiloxane, hexamethyl- (8CI, 9CI) (CA INDEX NAME)



RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

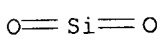


L49 ANSWER 14 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1999:298419 HCAPLUS
DN 130:325835
TI **Hydrophobic** metal oxide fine powders and their preparation method
IN Komai, Eiji; Murota, Masamichi; Jono, Hirokuni
PA Nippon Aerosil Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

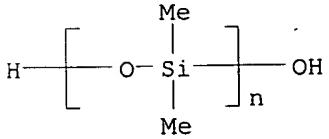
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 11124464 | A2 | 19990511 | JP 1997-289521 | 19971022 |

AB Title powders with little change in electrostatic charge, useful for thickeners, fillers, fluidity modifiers, etc., esp., as additives for electrophotog. toners, are prepd. by heating of metal oxide fine powders having sp. **surface** area 10-400 m2/g with epoxy-contg. silanes, amino-contg. org. compds., and **organopolysiloxanes** whose both terminals are blocked with reactive groups. Thus, Aerosil 200 (fumed SiO2) 100, KBM 403 (epoxy-contg. silane) 3, diethylaminopropylamine 1.6, and .alpha.,.omega.-**dihydroxydimethylpolysiloxane** 20 parts were treated in hexane at 200.degree. for 1 h to give **surface**-treated **SiO2** with **hydrophobicity** 95% and sp. **surface** area 100 m2/g, showing friction charge +300 .mu.C/g initially, +340 .mu.C/g after 48 h at 100.degree. and 20% relative humidity, and +250 .mu.C/g after 48 h at 40.degree. and 80% relative humidity.

IT **7631-86-9**, Aerosil 200, uses
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(colloidal; manuf. of **hydrophobic** powd. metal oxides by **surface** treating with epoxysilanes, amino-contg. org. compds. and **siloxanes**)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



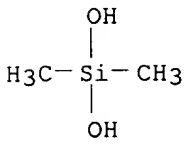
IT **31692-79-2**, Hydroxy-terminated **dimethylsiloxane**
**31900-57-9D**, Dimethylsilanediol homopolymer, hydroxy-terminated
RL: MOA (Modifier or additive use); USES (Uses)
(manuf. of **hydrophobic** powd. metal oxides by **surface** treating with epoxysilanes, amino-contg. org. compds. and **siloxanes**)
RN 31692-79-2 HCAPLUS
CN Poly[oxy(dimethylsilylene)], .alpha.-hydro-.omega.-hydroxy- (8CI, 9CI) (CA INDEX NAME)



RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si



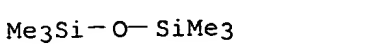
L49 ANSWER 16 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:604872 HCAPLUS
DN 129:191139
TI Manufacture of **hydrophobic silica** gels with reduced **surface** area
IN Burns, Gary T.; Hahn, James R.; Lentz, Charles W.; Reese, Clifford C.
PA Dow Corning Corp., USA
SO PCT Int. Appl., 31 pp.
CODEN: PIXXD2
DT Patent
LA English
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 9837020 | A1 | 19980827 | WO 1998-US3273 | 19980218 |
| | AU 9866605 | A1 | 19980909 | AU 1998-66605 | 19980218 |
| | EP 963345 | A1 | 19991215 | EP 1998-908610 | 19980218 |
| | R: BE, DE, ES, FR, GB, IT | | | | |
| | BR 9810408 | A | 20000822 | BR 1998-10408 | 19980218 |
| | JP 2001513066 | T2 | 20010828 | JP 1998-536883 | 19980218 |
| PRAI | US 1997-806005 | A | 19970224 | | |
| | WO 1998-US3273 | W | 19980218 | | |

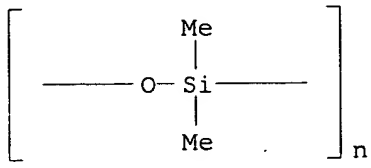
OS MARPAT 129:191139
AB The method comprises three steps, where in the first step a mixt. comprising a silica hydrosol and colloidal silica is formed, the second step the mixt. is heat-treated in the presence of a strong mineral acid at a pH <1 to form a silica hydrogel having incorporated therein colloidal silica, and in the third step the silica hydrogel is contacted with an organosilicon compd. selected from organosilanes having a general formula R1aHbSiX4-a-b where X is a halogen or C1-12 alkoxy radicals, a is 0-3, b is 0 or 1, a+b=1, 2, or 3 with the proviso that when b=1 then a+b=2 or 3 and **organosiloxanes** having a general formula R1nSiO(4-n)/2 where n is an integer of 2 or 3 in the presence of a catalytic amt. of a strong acid to effect **hydrophobing** of the **silica** hydrogel thereby forming a **hydrophobic silica** gel having a **surface** area of 100-450 m2/g as measured in the dry state.. In a preferred method the **hydrophobic silica** gel is contacted with a sufficient quantity of an org. solvent immiscible with water to convert the **hydrophobic silica** hydrogel **into** a **hydrophobic silica** organogel.
IT **7631-86-9**, Ludox SM, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(colloidal; manuf. of **hydrophobic silica** gels with reduced **surface** area)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

O═Si═O

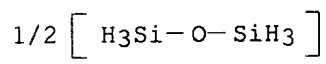
IT **107-46-0 9016-00-6, Polydimethylsiloxane**
**30110-75-9, Divinyltetramethyldisiloxane**
RL: TEM (Technical or engineered material use); USES (Uses)
(manuf. of **hydrophobic silica** gels with reduced **surface** area)
RN 107-46-0 HCAPLUS
CN Disiloxane, hexamethyl- (8CI, 9CI) (CA INDEX NAME)

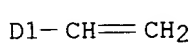


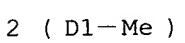
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 30110-75-9 HCAPLUS
CN Disiloxane, diethenyltetramethyl- (9CI) (CA INDEX NAME)





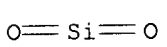


L49 ANSWER 30 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:226041 HCAPLUS
DN 124:292017
TI Manufacture of dispersions of **diorganopolysiloxanes** with high degree of polymerization for silicone rubber
IN Inoe, Yoshio
PA Shinetsu Chem Ind Co, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 08020722 | A2 | 19960123 | JP 1994-177650 | 19940706 |
| | JP 2999927 | B2 | 20000117 | | |

AB Title dispersions are prepd. by mixing **diorganopolysiloxanes** HO(R1R2SiO)nH (I; R1-2 = hydrocarbyl; n is a no. for exhibiting viscosity at 25.degree. 5-100,000 cSt), **hydrophobic SiO2**, and volatile org. solvents and/or volatile **organosiloxanes** and treating the resulting dispersions with aminosilanes R3R4Si(NR52)2 (II; R3-4 = hydrocarbyl; R5 = alkyl) and/or partial hydrolyzates thereof to cause added amt. of Si(NR52)2 groups of II per mol silanol group of I 0.5-10 mol. The dispersions are useful for manuf. of release agents and coating materials (no data). **Octamethylcyclotetrasiloxane** 700, OH-terminated **dimethylpolysiloxane** 230, and **surface** -treated **SiO2** 70 g were mixed with 3.5 g OH-terminated **methylvinylpolysiloxane** and 2.0 g dimethylbis(dimethylamino)silane and heated to give a dispersion contg. 23% **dimethylpolysiloxane** with wt.-av. mol. wt. 553000 and av. d.p. 7500, 100 g of which was mixed with 1.5 g methyltris(Me Et ketoxime)silane and 0.1 g dibutyltin dilaurate and cured at room temp. to give a rubber sheet showing hardness 43 and elongation 450%.

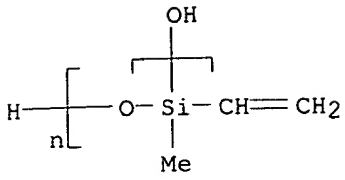
IT **7631-86-9**, **Silica**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(filler; manuf. of dispersions of **diorganopolysiloxanes** with high d.p. for silicone rubber contg.)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **176035-63-5P**
RL: IMF (Industrial manufacture); PRP (Properties); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(rubber; manuf. of dispersions of **diorganopolysiloxanes** with high d.p. for)
RN 176035-63-5 HCAPLUS
CN Silanediamine, hexamethyl-, polymer with .alpha.-hydro-.omega.-hydroxypoly[oxy(dimethylsilylene)], .alpha.-hydro-.omega.-hydroxypoly[oxy(ethenylmethylsilylene)] and octamethylcyclotetrasiloxane (9CI) (CA INDEX NAME)

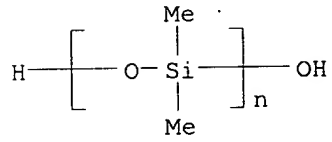
CM 1

CRN 157395-90-9
CMF (C3 H6 O Si)n H2 O
CCI PMS



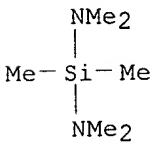
CM 2

CRN 31692-79-2
CMF (C2 H6 O Si)n H2 O
CCI PMS



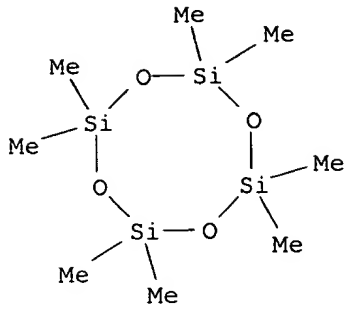
CM 3

CRN 3768-58-9
CMF C6 H18 N2 Si



CM 4

CRN 556-67-2
CMF C8 H24 O4 Si4

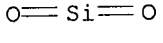

Me
Me
Me
O
Si
Si
O
Me
Me
Si
O
Si
O
Me
Me
Me
Me

L49 ANSWER 31 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:547763 HCAPLUS
DN 123:22140
TI One-component electrophotographic magnetic developer and image formation
IN Yoshida, Satoshi; Kukimoto, Tsutomu; Urawa, Motoo
PA Canon Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

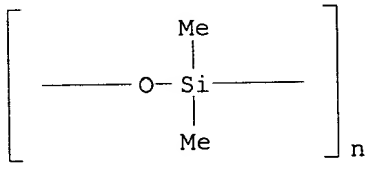
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 07064349 | A2 | 19950310 | JP 1993-232270 | 19930826 |
| | JP 3108842 | B2 | 20001113 | | |

AB The developer with wt. av. particle size 4-10 .mu.m and abs. value of two-component triboelectricity for Fe powders (x) 40-100 .mu.C/g comprises toner particles contg. a binder resin 100, magnetic powders 5-60, and black Ti oxide 0.2-20 parts and **hydrophobic** silicic acid fine powders. Images are formed by developing using a support having the developer **layer** coated with a resin **layer** contg. an elec. conducting fine particles, where x/y (y = abs. value of triboelectricity measured by suction method on the support) 2.5-15. The developer showed high resoln. and repeating durability.

IT **7631-86-9**, Silica, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(one-component electrophotog. magnetic developer contg. black titanium oxide and **hydrophobic** silicic acid with high resoln. and its manuf.)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



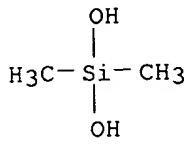
IT **9016-00-6**, **Poly(dimethylsiloxane)**
**31900-57-9**, Dimethylsilanediol homopolymer
RL: TEM (Technical or engineered material use); USES (Uses)
(**silica surface**-treated with; one-component electrophotog. magnetic developer contg. black titanium oxide and **hydrophobic** silicic acid with high resoln. and its manuf.)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)




RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si



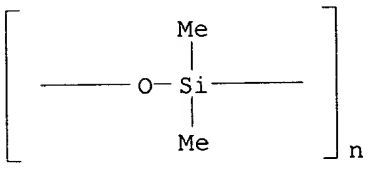
L49 ANSWER 35 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:458428 HCAPLUS
DN 121:58428
TI Spreading of Thin **Films** of Ordered Nonionic **Surfactants**. Origin of the Stepped Shape of the Spreading Precursor
AU Tiberg, Fredrik; Cazabat, Anne-Marie
CS College de France, Paris, 75 231, Fr.
SO Langmuir (1994), 10(7), 2301-6
CODEN: LANGD5; ISSN: 0743-7463
DT Journal
LA English
AB The authors report on the phenomenon of **surface**-induced self-assembly, obsd. as nonionic **siloxane poly**(ethylene oxide) **surfactants** spread at the solid-air interface. Microdroplets of pure **surfactants** are put on high- and low-energy solid **surfaces** and the shape evolution is monitored by ellipsometry. Spreading, if any, occurs through an autophobic thin precursor **film** growing at the foot of the nonwetting main drop. Strikingly different shapes of the precursors are obsd., depending on the interfacial properties of the substrate. No specific structure appears as the **surfactants** spread over high-energy **surfaces**. On low-energy **surfaces**, however, these mols. assemble **into** a densely packed bilayer with long-range intrinsic order. Stratified or "stepped" precursors are seen on medium-energy **surfaces**. The profile of the precursor is the outcome of the relative strengths of the substrate-**surfactant** and **surfactant**-**surfactant** interaction potentials as well as the mol. dynamic picture within the **layer** precursor. The area covered by the spreading **film** always increases linearly with time, yielding apparent diffusion coeffs. that are sensitive to **surfactant** compn., **surface** chem., and perhaps most importantly to the atm. humidity. The ability of the **surfactants** to form dense bilayers is related to the geometry of the mol., while the sensitivity to humidity is caused by specific interactions between the ethylene oxide (I) part of the **surfactants** and water. Spreading on low-energy **surfaces** is obsd. for **surfactants** with **trisiloxane** **hydrophobes** and relatively short I chains, but not for corresponding hydrocarbon **surfactants**. This is argued to be the consequence of the relative bulkiness of the **trisiloxane** **hydrophobe** allowing space for the hydrophilic ethylene oxide chain and the high d. of external **hydrophobic** Me groups on the **siloxane** backbone. The conjunction of these properties may explain the "superspreading" ability of these **trisiloxane** **surfactants**.
IT **7631-86-9**, **Silica**, properties
RL: PRP (Properties)
(**surface** of, **hydrophobizing** agent-modified, spreading of **siloxane poly**(ethylene oxide) **surfactants** on)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

O=Si=O

L49 ANSWER 34 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:586793 HCAPLUS
DN 121:186793
TI Liquefiable cosmetic powders
IN Tanaka, Yoichiro
PA Kosei Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 5 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 06166611 | A2 | 19940614 | JP 1992-321946 | 19921201 |

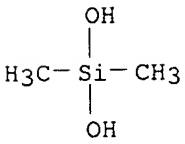
OS MARPAT 121:186793
AB Cosmetic powders, which are liquefied when applied to the skin, contain **hydrophobic silica** with **surface** area .gtoreq.80 m2/g 0.1-7, fluoro compd.-coated cosmetic powders 1-50, oily substances 30-40, and aq. substances 30-90 wt.%. The cosmetics have good skin affinity and emollient property. Asahigard AG 530 (fluoro compd.)-treated cosmetic powders (titan, talc, mica, and pigment) 17.0, trimethylsiloxyl group-contg. **silica** (**surface** area 325 m2/g) 3.0, liq. paraffin 3.0, microcrystn. wax 15.0, di-Me **polysiloxane** supported on acrylate **copolymer** 20.0, and H2O 42.0 parts were mixed to give make-up powders.
IT **9016-00-6**, Poly[oxy(dimethylsilylene)] **31900-57-9**
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(cosmetic powders contg. fluoro compd.-coated powders and **hydrophobic silica** and, liquefiable)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

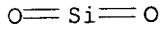
CRN 1066-42-8
CMF C2 H8 O2 Si



IT **7631-86-9, Silica 7631-86-9D, Silica**
, trimethylsiloxy group-contg.
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(**hydrophobic**, liquefiable cosmetic powders contg. fluoro compd.-treated powders and)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



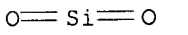
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



L49 ANSWER 33 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:663321 HCAPLUS
DN 121:263321
TI Cosmetic powders containing silica and fluorine compound-coated powders
IN Tanaka, Yoichiro; Nakabayashi, Jiro; Kuribayashi, Satsuki; Hayashi, Kimie; Takarada, Takeshi
PA Kosei Kk, Japan
SO Jpn. Kokai Tokkyo Koho, 9 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| PI JP 06211620 | A2 | 19940802 | JP 1993-19232 | 19930112 |
| JP 3219886 | B2 | 20011015 | | |

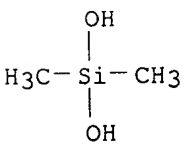
OS MARPAT 121:263321
AB Stable cosmetic powders contain **hydrophobicized SiO2** ( **surface** area .gtoreq.80 m2/g) 0.1-7, F compd.-coated cosmetic powders 1-50, oily ingredients 0.5-40, aq. ingredients 30-90, and unstable active ingredients 0.001-10 wt.%. The prens. liquefied after spreading on the skin. A cosmetic powder contg. Cab-O-Sil TS 530 (trimethylsiloxylated SiO2) 5.0, resorcin 0.5, 1,3-butylene glycol 5.0, glycerin 5.0, lactic acid 0.1, Na lactate 0.1, antiseptic 0.2, Asahiguard AG 530-treated talc 5.0, Asahiguard AG 530-treated nylon powder 10.0, starch fatty acid ester 2.3, squalane 0.2, and H2O to 100 wt.% was kept at 40.degree. for 6 mo to show 98% residual resorcin.
IT **7631-86-9, Silica**
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(**hydrophobic**; stable cosmetic powders contg. **hydrophobicized silica** and fluorine-coated powders and other ingredients)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



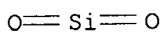
IT **31900-57-9**
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(stable cosmetic powders contg. **hydrophobicized silica** and fluorine-coated powders and other ingredients)
RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si



L49 ANSWER 32 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1995:521093 HCAPLUS
DN 123:94292
TI Retention characteristics of **octadecylsiloxane**-bonded **silica** and porous polymer particle-loaded membranes for solid-phase extraction
AU Mayer, Mary L.; Poole, Salwa K.; Poole, Colin F.
CS Department of Chemistry, Wayne State University, Detroit, MI, 48202, USA
SO J. Chromatogr., A (1995), 697(1 + 2), 89-99
CODEN: JCRAEY
DT Journal
LA English
AB Forced-flow planar chromatog. was used to det. the kinetic and retention properties of an **octadecylsiloxane**-bonded, **silica** -based, particle-loaded membrane used for solid-phase extn. The sorbent was heavily loaded with bonded phase resulting in a small intraparticle porosity. The large plate height and flow resistance indicates a heterogeneous particle size distribution for the membrane with a significant fraction of below av. size particles. The **hydrophobicity** and silanophilic indexes and system consts. in the solvation parameter model indicate similar retention properties to a common **octadecylsiloxane**-bonded **silica** cartridge sorbent under identical mobile phase conditions. The dimensional instability of a porous polymer particle-loaded membrane prevented its evaluation by forced-flow planar chromatog. by using the overpressured development chamber. Breakthrough vols. were detd. for the porous polymer membrane under typical sample processing conditions for a no. of solutes with varied properties and fitted to a solvation parameter model. A comparison to data previously obtained for an **octadecylsiloxane** -bonded, **silica**- based, particle-loaded membrane (Bakerbond) indicated that ease of cavity formation favors retention by the **octadecylsiloxane**-bonded **silica** particle-loaded membrane for non-polar and weakly polar analytes compared to the porous polymer particle-loaded membrane. Significantly larger breakthrough vols., however, are obtained on the porous polymer particle-loaded membrane for polar analytes. The porous polymer sorbent competes more effectively with H2O in dipole-type interactions and as a H-bond acid. A solvent effect is suggested speculatively as the origin of the porous-polymer sorbent's favorable retention of H-bond bases compared to the **octadecylsiloxane**-bonded, **silica**-based, material.
IT **7631-86-9, Silica**, properties
RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); ANST (Analytical study); PROC (Process)
(retention characteristics of **octadecylsiloxane**-bonded **silica** and porous polymer particle-loaded membranes for solid-phase extn.)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **7631-86-9D, Silica**, octadecylated
RL: ARU (Analytical role, unclassified); PEP (Physical, engineering or chemical process); PRP (Properties); ANST (Analytical study); PROC (Process)
(**surface**; retention characteristics of **octadecylsiloxane**-bonded **silica** and porous polymer

L49 ANSWER 28 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:446334 HCAPLUS
DN 125:88920
TI Silicone rubber compositions
IN Takahashi, Masaharu; Yoshino, Masachika; Uno, Takao
PA Shinetsu Chem Ind Co, Japan
SO Jpn. Kokai Tokkyo Koho, 7 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | JP 08100125 | A2 | 19960416 | JP 1994-261225 | 19940930 |
| | JP 3191579 | B2 | 20010723 | | |

AB The title compns. with low crepe hardening and good storage stability in the state of U-stock (i.e., before adding vulcanizing agents) comprise (A) **organopolysiloxanes** R1nSiO(4-n)/2 [R1 = (substituted) monovalent hydrocarbon; n = 1.98-2.02] 100, (B) **hydrophobic** aerosil **SiO2** with C adsorption .gtoreq.2% and **hydrophobic** degree .gtoreq.50 vol.% 10-70, and (C) low d.p. Si compds. contg. C1-10 silanol groups 0-3 parts. Thus, a compn. comprising 100 parts gum-type **organopolysiloxane** with av. d.p. .apprx.8000 and unblocked terminal chain ratio 8% composed of SiMe2O 99.95, Me vinyl **siloxane** 0.02, and di-Me vinyl **siloxane** 0.025 mol.%, 45 parts aerosil **SiO2 surface**-treated with **octamethylcyclotetrasiloxane**, and 0.5 part 1,3-**dihydroxytetramethyldisiloxane** was kneaded at 180.degree. and its Williams plasticity no. was measured. The compn. was then press-cured at 120.degree. and post-cured at 200.degree. to give test pieces.

IT **7631-86-9, Silica**, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**hydrophobic**, aerosil; silicone rubber compns. contg. **hydrophobic** aerosil **silica** and silanol group-contg. Si compds. with good storage stability)

RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

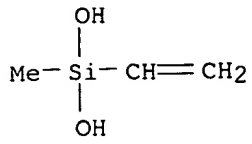
O=Si=O

IT **155665-02-4D**, Dimethylsilanediol-methylvinylsilanediol copolymer, dimethylvinylsilyl terminated
RL: POF (Polymer in formulation); PRP (Properties); USES (Uses)
(rubber; silicone rubber compns. contg. **hydrophobic** aerosil **silica** and silanol group-contg. Si compds. with good storage stability)

RN 155665-02-4 HCAPLUS
CN Silanediol, dimethyl-, polymer with ethenylmethylsilanediol (9CI) (CA INDEX NAME)

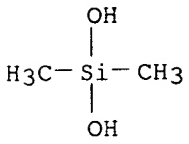
CM 1

CRN 3959-12-4
CMF C3 H8 O2 Si

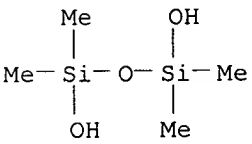


CM 2

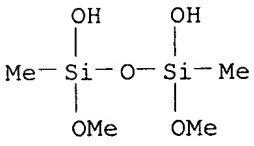
CRN 1066-42-8
CMF C2 H8 O2 Si



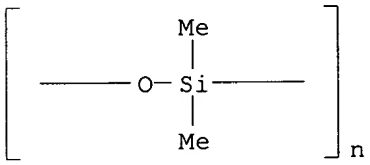
IT **1118-15-6**, 1,3-**Dihydroxytetramethyldisiloxane**
**178922-38-8**
RL: MOA (Modifier or additive use); USES (Uses)
(silicone rubber compns. contg. **hydrophobic** aerosil **silica** and silanol group-contg. Si compds. with good storage stability)
RN 1118-15-6 HCAPLUS
CN 1,3-Disiloxanediol, 1,1,3,3-tetramethyl- (8CI, 9CI) (CA INDEX NAME)



RN 178922-38-8 HCAPLUS
CN 1,3-Disiloxanediol, 1,3-dimethoxy-1,3-dimethyl- (9CI) (CA INDEX NAME)



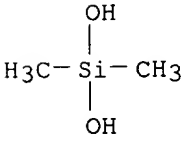
L61 ANSWER 5 OF 5 HCAPLUS COPYRIGHT 2002 ACS
AN 1994:581987 HCAPLUS
DN 121:181987
TI Silica/silicone nanocomposite films: a new concept in corrosion protection
AU Gentle, Theresa E.; Baney, Ronald H.
CS Dow Corning Corp., Midland, MI, 48686, USA
SO Mater. Res. Soc. Symp. Proc. (1992), 274(Submicron Multiphase Materials), 115-19
CODEN: MRSPDH; ISSN: 0272-9172
DT Journal
LA English
AB Thin films of silsesquioxane, (HSiO3/2)n, were applied to aluminum panels and to CMOS microelectronic circuit surfaces by spin or dip coating org. solns. of the silsesquioxane. **Nanoporous silica** was obtained by oxidn. of the silsesquioxane. These **nanoporous silica** films were then vacuum infiltrated with various viscosities of poly(**dimethylsiloxanes**) (PDMS) to form **hydrophobic** nanocomposites. The nanocomposite films were shown to provide superior hermetic protection against salt fog exposure when compared to PDMS and silica films alone. The composite films were characterized by FTIR and optical microscopy. FTIR spectra showed that the silica served as a skeletal framework holding the **hydrophobic** PDMS in place and preventing loss of adhesion. This is in contrast to PDMS films alone in which blistering of the film from the substrate can occur, thus, allowing ions and moisture to reach the surface and corrosion to take place.
IT **9016-00-6, Dimethylsiloxane 31900-57-9**
RL: TEM (Technical or engineered material use); USES (Uses)
(silica-silicone nanocomposite films for corrosion protection)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

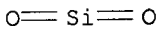
CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si

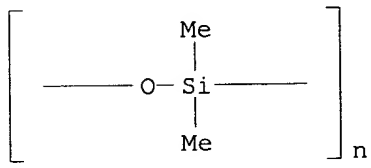


L49 ANSWER 27 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1996:492635 HCAPLUS
DN 125:144748
TI **Poly(dimethylsiloxane)** chains at a **silica surface**
AU Litvinov, V. M.
CS PAC-MC, DSM Research B. V., 6160 MD, Neth.
SO Organosilicon Chem. II, [Muench. Silicontage], 2nd (1996), Meeting Date 1994, 779-814. Editor(s): Auner, Norbert; Weis, Johann. Publisher: VCH, Weinheim, Germany.
CODEN: 63DJA3
DT Conference; General Review
LA English
AB A review with 52 refs. discussed solid-state NMR studies of mol. motions and network structure in elastomeric **poly(dimethylsiloxane)** (PDMS) filled with hydrophilic and **hydrophobic** Aerosil (**silica**) and compared with the results provided by other methods.

IT **7631-86-9, Silica,** uses
RL: NUU (Other use, unclassified); USES (Uses)
(dynamics of elastomeric **poly(dimethylsiloxane)** chains at a **silica surface**)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



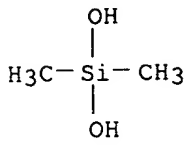
IT **9016-00-6,** Di-Me **siloxane,** SRU **31900-57-9,** Dimethylsilanediol homopolymer
RL: PRP (Properties)
(rubber; dynamics of elastomeric **poly(dimethylsiloxane)** chains at a **silica surface**)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si



L63 ANSWER 1 OF 1 HCAPLUS COPYRIGHT 2002 ACS
AN 2002:114639 HCAPLUS
DN 136:295409
TI SiOH-Functionalized Polystyrene Latexes. A Step toward the Synthesis of Hollow Silica Nanoparticles
AU Tissot, I.; Reymond, J. P.; Lefebvre, F.; Bourgeat-Lami, E.
CS LCPP, LGPC, and LCOMS, CNRS, CPE, Villeurbanne, 69616, Fr.
SO Chemistry of Materials (2002), 14(3), 1325-1331
CODEN: CMATEX; ISSN: 0897-4756
PB American Chemical Society
DT Journal
LA English
CC 37-3 (Plastics Manufacture and Processing)
Section cross-reference(s): 57
AB Following a previous work (Tissot, I.; Lefebvre, F.; Bourgeat-Lami, E. Macromols. 2001, submitted for publication), polystyrene latex particles contg. silanol groups have been synthesized in emulsion polymn. using 3-(trimethoxysilyl)propyl methacrylate (MPS) as a functional comonomer. The surface properties of the functionalized polymer latexes were investigated in depth using electrophoretic measurements and the soap titrn. method. Both techniques gave qual. evidence of the presence of SiOH groups at the particles surface. The concn. of surface charges was quantified by potentiometric and conductometric titrns. As expected, the surface charge d. increased with an increase in the pH and with an increase in the MPS concn. Because of the presence of silanol groups at the particles surface, no loss of colloidal stability was obsd. when the functional polystyrene latexes were suspended into ethanol/water mixts. The silanol groups were then converted into a 20 nm thick silica layer using a procedure derived from the Stoeber method (Stoeber, W.; Fink, A.; Bohn, E. J. Colloid Interface Sci. 1968, 26, 62). Hollow silica nanoparticles were finally generated by thermal degrdn. of the templating org. latex core. This work illustrates the detg. role of interfaces in the structuring of org.-inorg. colloids.
Zeta potential
(**SiOH**-functionalized polystyrene latexes. a step toward synthesis of hollow silica nanoparticles)
IT 26949-20-2P, Styrene-3-(trimethoxysilyl)propyl methacrylate copolymer
RL: PRP (Properties); RCT (Reactant); SPN (Synthetic preparation); PREP (Preparation); RACT (Reactant or reagent)
(SiOH-functionalized polystyrene latexes. a step toward synthesis of hollow silica nanoparticles)
IT 7631-86-9P, Silica, preparation
RL: PRP (Properties); SPN (Synthetic preparation); PREP (Preparation)
(SiOH-functionalized polystyrene latexes. a step toward synthesis of hollow silica nanoparticles)

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L49 ANSWER 25 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1997:557783 HCAPLUS
DN 127:183308
TI Electrophotographic toner containing no charge controller
IN Arakawa, Takeshi; Inoue, Masatake; Aso, Hiroshi; Fujisawa, Ryo
PA Mita Industrial Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 8 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 09211885 | A2 | 19970815 | JP 1996-16000 | 19960131 |

PI JP 09211885 A2 19970815 JP 1996-16000 19960131

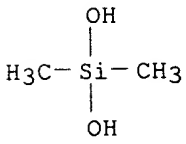
AB The toner contg. no charge controller is **surface**-treated with 0.5-2.0% (on total toner) SiO2 and Al2O3 fine particles with wt. ratio 3:1-1:3 in which (1) .gtoreq.70% of the **SiO2 surface** is **hydrophobized** or (2) .gtoreq.50% of the **SiO2 surface** is **hydrophobized** to show central grain size D50 20-100 nm and vol. fraction of .gtoreq.500 nm particles 1-5%. The toner shows high charge under high-temp. and humid condition and gives low-fog images.

IT **31900-57-9**, Dimethylsilanediol homopolymer
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(electrophotog. toner contg. no charge controller **surface-hydrophobized** with **silica** and alumina particles)

RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

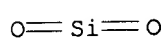
CM 1

CRN 1066-42-8
CMF C2 H8 O2 Si



IT **7631-86-9**, Silica, processes
RL: PEP (Physical, engineering or chemical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(electrophotog. toner contg. no charge controller **surface-hydrophobized** with **silica** and alumina particles)

RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

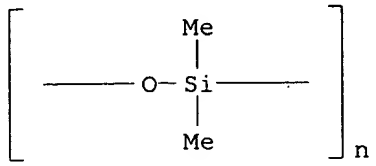


IT **9016-00-6**, Dimethyl **siloxane**
RL: MOA (Modifier or additive use); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)

(**hydrophobizing** agent; electrophotog. toner contg. no charge controller **surface-hydrophobized** with **silica** and alumina particles)

RN 9016-00-6 HCAPLUS

CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)

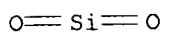


L49 ANSWER 22 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 1998:300607 HCAPLUS
DN 129:5533
TI Preparation of **hydrophobic** organosilicate-modified **silica** gels
IN Burns, Gary Thomas; Hahn, James Richard; Reese, Clifford Carlton
PA Dow Corning Corporation, USA
SO U.S., 8 pp.
CODEN: USXXAM
DT Patent
LA English
FAN.CNT 1

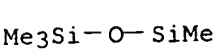
| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | US 5750610 | A | 19980512 | US 1997-805102 | 19970224 |
| | WO 9837015 | A1 | 19980827 | WO 1998-US3123 | 19980218 |
| | AU 9862809 | A1 | 19980909 | AU 1998-62809 | 19980218 |
| | EP 963344 | A1 | 19991215 | EP 1998-905111 | 19980218 |
| | R: BE, DE, ES, FR, GB, IT | | | | |
| | BR 9807723 | A | 20000215 | BR 1998-7723 | 19980218 |
| | JP 2000512972 | T2 | 20001003 | JP 1998-536828 | 19980218 |
| | TW 381065 | B | 20000201 | TW 1998-87102454 | 19980220 |
| PRAI | US 1997-805102 | A | 19970224 | | |
| | WO 1998-US3123 | W | 19980218 | | |

AB The title method comprises two steps, where in the first step an organosilicate-modified silica hydrosol is heat treated in the presence of a strong mineral acid at a pH less than about pH 1 to form an organosilicate-modified silica hydrogel. In the second step the organosilicate-modified silica hydrogel is contacted with an organosilicon compd. in the presence of a catalytic amt. of a strong acid to effect **hydrophobing** of the organosilicate-modified **silica** hydrogel thereby forming a **hydrophobic** organosilicate-modified **silica** hydrogel having a **surface** area within a range of about 100-750 m2/g as measured in the dry state. In a preferred method the **hydrophobic** organosilicate-modified **silica** gel is contacted with a sufficient quantity of a water-immiscible org. solvent to convert the **hydrophobic** organosilicate-modified **silica** hydrogel **into** a **hydrophobic** organosilicate-modified **silica** organogel. The silica gels are useful in silicone rubber compns.

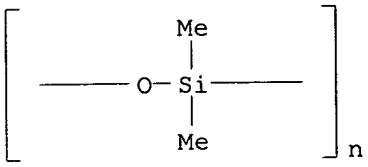
IT **7631-86-9D**, Silica, organosilicate-modified, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(hydrosols; prepn. of **hydrophobic** organosilicate-modified **silica** gels)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **107-46-0DP, Hexamethyldisiloxane**, reaction products with organosilicate-modified **silica** gel
RL: IMF (Industrial manufacture); MOA (Modifier or additive use); PREP (Preparation); USES (Uses)
(prepn. of **hydrophobic** organosilicate-modified **silica** gels)
RN 107-46-0 HCAPLUS
CN Disiloxane, hexamethyl- (8CI, 9CI) (CA INDEX NAME)



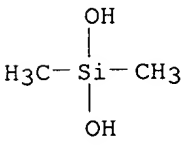
IT **9016-00-6, Polydimethylsiloxane 31900-57-9, Polydimethylsiloxane**
RL: POF (Polymer in formulation); USES (Uses)
(rubber; prepn. of **hydrophobic** organosilicate-modified **silica** gels)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



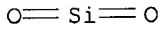
RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

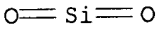
CRN 1066-42-8
CMF C2 H8 O2 Si



L49 ANSWER 10 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:364672 HCAPLUS
DN 133:108617
TI **Hydrophobic SiO2** aerogels prepared with **polyethoxydisiloxanes**
AU Deng, Zhong-Sheng; Wei, Jian-Dong; Wu, Ai-Mei; Bao, Yu-Ping; Wang, Jue; Shen, Jun; Zhou, Bin; Chen, Ling-Yan
CS Pohl Inst. SOlid State Phys., Tongji Univ., Shanghai, 200092, Peop. Rep. China
SO Wuji Cailiao Xuebao (2000), 15(2), 381-384
CODEN: WCXUET; ISSN: 1000-324X
PB Kexue Chubanshe
DT Journal
LA Chinese
AB **Hydrophobic SiO2** aerogels were produced by the **surface** modification of alc.-gels prepd. via sol-gel process using **polyethoxydisiloxanes** (E-40) as the precursor and followed by ethanol supercrit. drying. The structure of the modified silica aerogels was a **silica** matrix produced by hydrolysis and condensation of **polyethoxydisiloxanes**. Si-CH3 was modified on the **surface** of the **silica** matrix. The pore size decreased from 23.1 nm to 18.2 nm, the sp. **surface** area increased from 477 m2 g-1 to 563 m2 g-1 and the water vapor adsorption decreased from 0.04 to 0.0012 (wt. ratio) after the **surface** modification of **silica** aerogels. The existence of Si-CH3 was obsd. using IR spectra.
IT **7631-86-9P, Silica**, preparation
RL: SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(**hydrophobic SiO2** aerogels prepd. with **polyethoxydisiloxanes**)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



L49 ANSWER 12 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:69383 HCAPLUS
DN 132:158095
TI Codeposition of hydrophilic and **hydrophobic silica** with copper from acid copper sulfate baths
AU Terzieva, V.; Fransaer, J.; Celis, J. -P.
CS Faculty of Chemistry, University of Sofia, Sofia, Bulg.
SO Journal of the Electrochemical Society (2000), 147(1), 198-202
CODEN: JESOAN; ISSN: 0013-4651
PB Electrochemical Society
DT Journal
LA English
AB The influence of the **hydrophobicity** of **silica** particles on the electrodeposition of Cu-SiO2 composite coatings from acid copper sulfate solns. on rotating disk electrodes was studied. Spherical, nearly monodisperse hydrophilic and **hydrophobic silica** particles were used. The hydrophilic silica particles were prepd. by the Stober process. These particles were made **hydrophobic** by a treatment with oligodimethyl **siloxane**-.alpha.,.omega.-diol. The effect of cetyltrimethylammonium hydrogen sulfate (CTAHS) and sodium 1-dodecanesulfonate on the codeposition behavior was studied. Hydrophilic silica did not codeposit from **surfactant**-free nor from **surfactant**-contg. acid copper sulfate solns., but up to 4% (= 14 vol.%) of **hydrophobic silica** codeposited from solns. contg. 15 g/L of silica particles and 10-4M CTAHS. The codeposition rate of **hydrophobic silica** slowly decreased with time. The amt. of codeposited particles was highest for a c.d. of 5 A/dm2 and a rotation speed of 400 rpm.
IT **7631-86-9, Silica**, properties
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(codeposition of hydrophilic and **hydrophobic silica** with copper from acid copper sulfate baths)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)

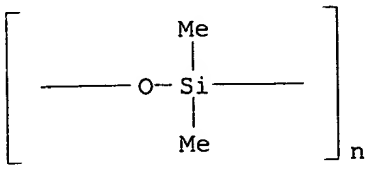


IT **37373-11-8**
RL: PEP (Physical, engineering or chemical process); PRP (Properties); PROC (Process)
(electrodeposition on rotating disk electrodes in sulfate bath contg. **surfactant** and influence of **hydrophobicity** of **silica** particles)
RN 37373-11-8 HCAPLUS
CN Copper alloy, base, Cu,SiO2 (9CI) (CA INDEX NAME)

| Component | Component Registry Number |
|---|---|
| Cu | 7440-50-8 |
| SiO2 | 7631-86-9 |

IT **9016-00-6**, Dimethylsilanediol homopolymer, SRU **31900-57-9**, Dimethylsilanediol homopolymer
RL: NUU (Other use, unclassified); PRP (Properties); USES (Uses)
(in **hydrophobic** treatment of **silica** for electrodeposition of copper-**silica** composites on rotating

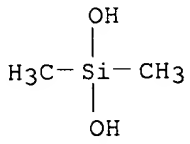
disk electrodes in sulfate bath)
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 31900-57-9 HCAPLUS
CN Silanediol, dimethyl-, homopolymer (9CI) (CA INDEX NAME)

CM 1

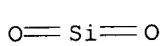
CRN 1066-42-8
CMF C2 H8 O2 Si



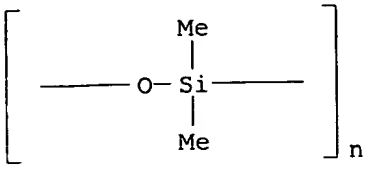
L49 ANSWER 9 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 2000:493611 HCAPLUS
DN 133:109644
TI Cosmetic compositions containing **surface-hydrophobized silica**-coated metal oxide particles, sol of silica-coated metal oxide, and processes for producing these
IN Wada, Koichi; Ishii, Nobuaki; Irie, Mitsuharu; Sekiguchi, Kazuo; Takama, Michihiro
PA Showa Denko K. K., Japan
SO PCT Int. Appl., 95 pp.
CODEN: PIXXD2
DT Patent
LA Japanese
FAN.CNT 1

| | PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|---|
| PI | WO 2000042112 | A1 | 20000720 | WO 2000-JP88 | 20000111 |
| | EP 1167462 | A1 | 20020102 | EP 2000-900179 | 20000111 |
| | R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO | | | | |
| PRAI | JP 1999-4613 | A | 19990111 | | |
| | US 1999-117551P | P | 19990128 | | |
| | JP 1999-312318 | A | 19991102 | | |
| | WO 2000-JP88 | W | 20000111 | | |

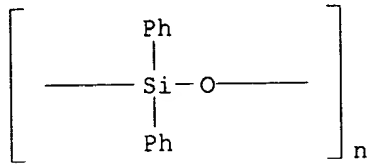
OS MARPAT 133:109644
AB Disclosed are a cosmetic prepn. contg. silica-coated metal oxide particles whose **surface** has been treated with a **hydrophobizing** agent; particles obtained by treating metal oxide particles having a specific ratio regarding IR absorption spectrum intensity and a specific refractive index with a **hydrophobizing** agent, and a process for producing the particles; and a sol of a silica-coated metal oxide from which the particles are obtained, and a process for producing the sol. An UV-screening cosmetic prepn. giving an excellent feeling of transparency can be obtained in which the particles are satisfactorily dispersed. A silica-coated titanium oxide particles were prepd. and further coated with dimethyldiethoxysilane to obtain **surface-hydrophobized silica**-coated titanium oxide particles. The obtained particles were combined with other ingredients to make a cosmetic foundation.
IT **7631-86-9**, Silica, biological studies **9016-00-6**, **Dimethylpolysiloxane 32129-24-1**, **Diphenylsiloxane**
RL: BUU (Biological use, unclassified); BIOL (Biological study); USES (Uses)
(cosmetic compns. contg. **surface-hydrophobized silica**-coated metal oxide particles or **silica**-coated metal oxide sol)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



RN 32129-24-1 HCAPLUS
CN Poly[oxy(diphenylsilylene)] (9CI) (CA INDEX NAME)



L49 ANSWER 5 OF 39 HCAPLUS COPYRIGHT 2002 ACS
AN 2001:933873 HCAPLUS
DN 136:55089
TI Semiconducting silicone rubber compositions for the manufacture of developing rollers of printers or copiers with good print property and freedom from blister
IN Murano, Toshiro; Uemura, Katsuya
PA Oki Data Corporation, Japan
SO Jpn. Kokai Tokkyo Koho, 15 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
FAN.CNT 1

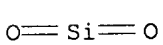
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| JP 2001356586 | A2 | 20011226 | JP 2000-174990 | 20000612 |

PI JP 2001356586 A2 20011226

AB The rollers have a core which is surfaced with a semiconducting silicone rubber **layer** for contacting the nonmagnetic one component developing agent (toner), where the rubber **layer** contains spherical particles of silicone elastomer having av. diam. 1-30 .mu.m, elec. conductors and **hydrophobic silica** having **hydrophobicity** of .gtoreq.70%. Thus, kneading a silicone compd. having 99.85 mol% **dimethylsiloxane** units and 0.15 mol% **methylvinylsiloxane** units, 100, with KMP 594 (silicone rubber microspheres; av. diam. 3-10 .mu.m) 130, dimethyldichlorosilane-**surface** treated **silica** (BET value 380 m2/g, diam. 7 .mu.m, **hydrophobicity** 70) 20, acetylene black 13 and 2,5-dimethyl-2,5-di(tert-butyl-peroxy)hexane 1.6 parts, press molding, vulcanizing and buffing gave a roller.

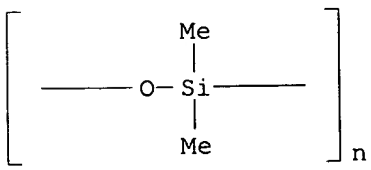
IT **7631-86-9**, **Silica**, properties
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)
(Aerosil EPR 976, **hydrophobically** treated fillers; semiconducting silicone rubber compns. for manuf. of developing rollers of printers or copiers with good print property and freedom from blister)

RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **9016-00-6**, TSF 451
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)
(**hydrophobicizing** agents; semiconducting silicone rubber compns. for manuf. of developing rollers of printers or copiers with good print property and freedom from blister)

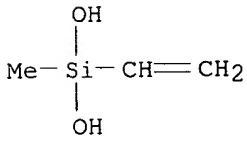
RN 9016-00-6 HCAPLUS
CN Poly[oxy(dimethylsilylene)] (8CI, 9CI) (CA INDEX NAME)



IT **155665-02-4**, Dimethylsilanediol-methylvinylsilanediol copolymer
RL: DEV (Device component use); POF (Polymer in formulation); PRP (Properties); USES (Uses)
(rubbers; semiconducting silicone rubber compns. for manuf. of developing rollers of printers or copiers with good print property and freedom from blister)
RN 155665-02-4 HCAPLUS
CN Silanediol, dimethyl-, polymer with ethenylmethylsilanediol (9CI) (CA INDEX NAME)

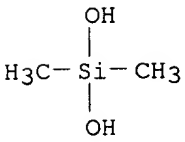
CM 1

CRN 3959-12-4
CMF C3 H8 O2 Si



CM 2

CRN 1066-42-8
CMF C2 H8 O2 Si

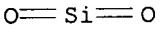


L34 ANSWER 2 OF 3 HCAPLUS COPYRIGHT 2002 ACS
AN 1975:580801 HCAPLUS
DN 83:180801
TI Hardenable materials producing elastomers, based on poly(**diorganosiloxanes**)
PA Elektroschmelzwerk Kempten G.m.b.H., Ger.
SO Fr. Demande, 16 pp.
CODEN: FRXXBL
DT Patent
LA French
FAN.CNT 1

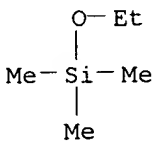
| PATENT NO. | KIND | DATE | APPLICATION NO. | DATE |
|---|---|---|---|---|
| FR 2243220 | A1 | 19750404 | FR 1973-32337 | 19730907 |

AB Finely divided SiO2 [**7631-86-9**] was milled with a silane in the presence of water to give a filler with **hydrophobic surface** groups which was compounded with poly(**dimethylsiloxane**) and vulcanizing agents to give silicone rubbers with improved tensile strength and elongation. Thus, 200 g SiO2, specific **surface** area 200 m2/g and bulk d. 65 g/l. was milled 2 hr at 70 rpm with 15 g Me3SiOEt (I) [**1825-62-3**] and 2 g H2O and the product was heated 2 hr at 250.degree. to remove volatiles and give a filler of bulk d. 280 g/l. A compounded mixt. of an **OH**-terminated poly(**dimethylsiloxane**) 128.0, an Me3Si-terminated poly(**dimethylsiloxane**) 56.0, the treated SiO2 filler 32.0, vinyl triacetoxysilane 12.8, a second portion of filler 12.0, and dibutyltin dilaurate 6.2 g, which did not flow or creep, was allowed to vulcanize 2 days at room temp. and the rubber obtained had tear strength 12.8 kg/cm, elongation at break 490%, and tensile strength 28 kg/cm2. A rubber contg. filler mixed, but not milled, with I had comparison values 9.1 kg/cm, 360%, and 15 kg/cm2.

IT **7631-86-9**, uses and miscellaneous
RL: USES (Uses)
(silane-treated, **hydrophobic**, silicone rubber contg.)
RN 7631-86-9 HCAPLUS
CN Silica (7CI, 8CI, 9CI) (CA INDEX NAME)



IT **1825-62-3**
RL: USES (Uses)
(silica filler treated with, for silicone rubber)
RN 1825-62-3 HCAPLUS
CN Silane, ethoxytrimethyl- (6CI, 7CI, 8CI, 9CI) (CA INDEX NAME)



20may02 11:05:33 User259284 Session D1791.2

File 342:Derwent Patents Citation Indx 1978-01/200210
(c) 2002 Thomson Derwent
*File 342: Price changes as of 1/1/02. Please see HELP RATES 342.

S1 1 PN='EP 1153426'

Patent Family member of 09/841,453

? map ct/cg=

1 Select Statement(s), 5 Search Term(s)
Serial#SD138

? map ct/pn=

1 Select Statement(s), 5 Search Term(s)
Serial#SD139

? map pn/cg=

1 Select Statement(s), 3 Search Term(s)
Serial#SD140

? map pn/ct=

1 Select Statement(s), 3 Search Term(s)
Serial#SD141

? ex;ex sd140;ex sd139;ex sd138

0 CT=AU 200026243 + CT=EP 1153426 + CT=WO 200044036

0 CG=AU 200026243 + CG=EP 1153426 + CG=WO 200044036

5 PN=EP 688052 + PN=EP 849796 + PN=US 4072796 + PN=US 4885262 + PN=US 5069816

S4 5 Serial: SD139

27 CG=EP 688052 + CG=EP 849796 + CG=US 4072796 + CG=US 4885262 + CG=US 5069816

S5 27 Serial: SD138

? map pn

12 Select Statement(s), 148 Search Term(s)
Serial#SD142

? b 350 347;ex
20may02 11:08:45 User259284 Session D1791.3

SYSTEM:OS - DIALOG OneSearch
File 350:Derwent WPIX 1963-2001/UD,UM &UP=200231
(c) 2002 Thomson Derwent
*File 350: Please see HELP NEWS 350 for details about U.S. provisional applications. Also more updates in 2002.
File 347:JAPIO Oct/1976-2001/Dec(Updated 020503)
(c) 2002 JPO & JAPIO
*File 347: JAPIO data problems with year 2000 records are now fixed. Alerts have been run. See HELP NEWS 347 for details.

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Executing SD142
               43  S1:S11
      S1       43  Serial: SD142
? s s1 and hydrophob?
               43  S1
            46560  HYDROPHOB?
      S2        9  S1 AND HYDROPHOB?

Set      Items   Description
S1          43   S1:S11
S2           9   S1 AND HYDROPHOB?
S3           5   S1 AND (SILOXANE? OR POLYSILOXANE?)
S4           2   S3 NOT S2
S5           2   S1 AND (OH OR HYDROX????? OR SIOH)
S6           1   S5 NOT S2:S4
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2/9/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX


004553635
WPI Acc No: 1986-056979/**198609**
XRAM Acc No: C86-024129
Surface-stabilised porous silica bodies - having part surface coverage of a metal oxide useful as a chromatographic packing when an organo-silane coating is applied
Patent Assignee: DU PONT DE NEMOURS & CO E I (DUPO )
Inventor: STOUT R W
Number of Countries: 011 Number of Patents: 008
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| EP 172730 | A | 19860226 | EP 85305813 | A | 19850815 | 198609 | B |
| JP 61058811 | A | 19860326 | JP 85177774 | A | 19850814 | 198619 | |
| DK 8503699 | A | 19860216 | | | | 198620 | |
| US 4600646 | A | 19860715 | US 84640821 | A | 19840815 | 198631 | |
| EP 172730 | B | 19881207 | | | | 198849 | |
| CA 1247073 | A | 19881220 | | | | 198904 | |
| DE 3566658 | G | 19890112 | | | | 198904 | |
| JP 89057046 | B | 19891204 | | | | 199001 | |

Priority Applications (No Type Date): US 84640821 A 19840815

Abstract (Basic): EP 172730 A

(A) Surface-stabilised, porous silica bodies (I) having uniform pore size and a particle dia. 0.5-100 micro.m. have a discontinuous surface covering of metal oxide, thereby providing a surface mosaic of metal oxide and Si oxide areas.

(B) prepn. of (I) comprises: (a) mixing an aq. suspension of porous silica bodies with an aq. soln. of a metal cpd. in an amt. sufficient to provide a final ave. coverage of 0.25-less than 4 micro.mol. metal cpd. per sq.m. of silica surface area; (b) removing trapped air from the silica body pore structure; (c) sepg. the solids from the soln; (d) drying the solids to remove surface moisture; and (e) heating to 600-1000 deg.C for 10-72 hrs., (c) A chromatographic packing (II) comprises (I) having a covalently attached organosilane coating.

USE/ADVANTAGE - (I) retain the highly controlled pore size distribution of the starting material silica microspheres. The metal oxide coating in parts hydrolytic stability to subsequently applied organosilane coatings over pH range 3.0-9.0. (II) can be strong anion or cation exchange packing or can be used in ligand or **hydrophobic** chromatography.

Abstract (Equivalent): EP 172730 B

Surface-stabilised, porous silica bodies having uniform pore size and a particle diameter range of 0.5 to 100 micro-m and having a discontinuous surface covering of metal oxide, the bodies having a surface mosaic of metal oxide and silicon oxide areas. (11pp)

Abstract (Equivalent): US 4600646 A

Surface-stabilised, porous silica bodies (I) have uniform pore size and particle dia. ranging from 0.5-100 microns and have a partial surface coverage of metal oxide in amts. insufficient to form a continuous layer over the silica but sifficient to effect an improvement in hydrolyte stability relative to uncoated silica, thereby providing a surface mosaic of metal oxide and silicon oxide.

Pref. the surface coverage ranges from 0.25 to below 4 micromoles of metal cpd. per square metre of silica surface area.

Pref. the starting material is uniform-sized silica microspheres.

Also new is chromotographic packing comprising bodies (I).

ADVANTAGE - Bodies (I) retain the highly controlled pore size distribution of the starting material silica microspheres. (8pp)r
Title Terms: SURFACE; STABILISED; POROUS; SILICA; BODY; PART; SURFACE;

2/9/2 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX


003515685
WPI Acc No: 1982-63667E/**198230**
**Hydrophobic** particulate porous or agglomerates silica(te) compsn. - forming defoaming compsn. for controlling foam in paper-making processes
Patent Assignee: ECONOMICS LAB INC (ECON )
Inventor: MALONEY J E
Number of Countries: 010 Number of Patents: 013
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| WO 8202414 | A | 19820722 | | | | 198230 | B |
| SE 8205144 | A | 19821101 | | | | 198246 | |
| NO 8203077 | A | 19821108 | | | | 198248 | |
| BR 8108954 | A | 19821214 | | | | 198305 | |
| JP 58500062 | W | 19830113 | | | | 198308 | |
| DE 3152678 | A | 19830224 | | | | 198309 | |
| GB 2107695 | A | 19830505 | GB 8124674 | A | 19811203 | 198318 | |
| FI 8203146 | A | 19830429 | | | | 198323 | |
| CA 1153275 | A | 19830906 | | | | 198339 | |
| US 4443357 | A | 19840417 | US 81224149 | A | 19810112 | 198418 | |
| GB 2107695 | B | 19850626 | | | | 198526 | |
| IT 1142647 | B | 19861008 | | | | 198829 | |
| JP 92069087 | B | 19921105 | WO 81US1620 | A | 19811203 | 199249 | |
| | | | JP 82500298 | A | 19811203 | | |

Priority Applications (No Type Date): US 81224149 A 19810112
Abstract (Basic): WO 8202414 A

A **hydrophobic**, particulate, porous or agglomerated silica or silicate contg. at least 40 mole % SiO2 as silica or silicate comprises the reaction product of (a) hydrophilic particulate porous or agglomerated silica or silicate of av. particle size above 0.1 micron but small enough to be non-settling and (b) **hydrophobic** aliphatic prim. or sec. alcohol, (a) and (b) being heated together at above 100 deg.C.. A **hydrophobic** pptd. silica contg. defoaming compsn. comprising the above reaction product and a liquid hydrocarbon or deriv. of b.pt. over 100 deg.C is also claimed.

The defoaming compsn. is used to control the foam in paper-making, esp. in repulping and defoaming black and white liquor and other waste or recyclable liquors and also in deinking and water laid sheet mfr. other uses are in food processing e.g. beet sugar refining and waste treatment.

Use of the aliphatic alcohol (b) instead of prior art polysiloxanes eliminates problems associated with the uniform taking up of printing ink by the paper stock

Abstract (Equivalent): GB 2107695 B

A substantially **hydrophobic**, particulate, porous or agglomerated silica or silicate containing at least 40 mole-% SiO2 as silica or silicate, the **hydrophobic** particulate silica or silicate being the reaction product of the components consisting essentially of: (a) a hydrophilic, particulate, porous or agglomerated silica or silicate containing at least 40 mole-% SiO2 as silica or silicate, the porous or agglomerated particles of which have an average particle size larger than 0.1 micrometers but small enough to be generally non-settling, and (b) a C8-30 aliphatic straight-chain primary alcohol, said reactants (a) and (b) having been heated together in admixture to a temperature above 100 deg.C until the reactants interact to form said reaction product.

Abstract (Equivalent): US 4443357 A

**Hydrophobic**, particulate, porous or agglomerated silica or

silicate contains at least 40 mole % SiO2 as silica or silicate. It is obtd. by reacting (A) hydrophilic, particulate, porous or agglomerated silica or silicate contg. at least 40% SiO2 as silica or silicate and having average particle size above 0.1 micron but small enough to be nonsettling with (B) **hydrophobic** aliphatic prim. or sec. alcohol free of hydrophilic gps., and pref. contg. 8-28C atoms.

(A) and (B) are heated together at above 100 deg.C until reaction occurs. Ratio of silica or silicate to alcohol is 0.25-20:1. The prod. can be used in defoaming compsns. for paper-making, food processing, waste treatment, etc. (14pp)l

2/9/5 (Item 5 from file: 350)
DIALOG(R)File 350:Derwent WPIX


001578078
WPI Acc No: 1976-12465X/**197607**
**Hydrophobic** silicic acid or alkali silicate particles - prepd by treatment with pre-polycondensed organo-halo-silane
Patent Assignee: DEUT GOLD & SILBER AG (DEGS )
Number of Countries: 007 Number of Patents: 010
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| NL 7508898 | A | 19760127 | | | | 197607 | B |
| BE 831705 | A | 19760126 | | | | 197608 | |
| DE 2435860 | A | 19760212 | | | | 197608 | |
| JP 51014900 | A | 19760205 | | | | 197612 | |
| FR 2279667 | A | 19760326 | | | | 197620 | |
| DE 2435860 | B | 19771020 | | | | 197743 | |
| US 4072796 | A | 19780207 | | | | 197808 | |
| GB 1504977 | A | 19780322 | | | | 197812 | |
| JP 82008763 | B | 19820218 | | | | 198211 | |
| NL 179829 | B | 19860616 | | | | 198628 | |

Priority Applications (No Type Date): DE 2435860 A 19740725
Abstract (Basic): NL 7508898 A

Fine particles of **hydrophobic** silicic acid or silicates are prepd. by b pptng. alkali silicate solns. with inorganic acids or metal salts solns. in known way, treating the acid pptd. suspension at 50-90 degrees C with a pre-polycondensed organohalosilane(s), filtering, washing drying and heating at 300-400 degrees C. Pref. dimethyldichlorosilane (I) or a mixt. of I and methyltrichlorosilane are pre-polycondensed by addn. of the stoichiometric amt. of water. The treated materials are used e.g. in cable mixes and water-resistant vulcanisates, as thickeners in water-resistant lubricants, in n on-foaming cosmetics, as pigments in organic binders as matting agents in lacquers, and as additives to anti-foams. TiO2 or ZrO2 can be rendered **hydrophobic** in the same way. The yield in the last stage of the process is improved.

Title Terms: **HYDROPHOBIC**; SILICIC; ACID; ALKALI; SILICATE; PARTICLE;

2/9/6 (Item 6 from file: 350)
DIALOG(R)File 350:Derwent WPIX


001145985
WPI Acc No: 1974-19688V/**197411**
**Hydrophobising** gp II-IV metal silicates - by treating suspension at 15-70oC with organo halo silane reacting with free hydroxyl groups and tempering prod at 200-500oC
Patent Assignee: DEUT GOLD & SILBER AG (DEGS )
Number of Countries: 004 Number of Patents: 005
Patent Family:

| Patent No | Kind | Date | Applicat No | Kind | Date | Week | |
|---|---|---|---|---|---|---|---|
| DE 2242728 | A | 19740307 | | | | 197411 | B |
| FR 2197961 | A | 19740503 | | | | 197422 | |
| GB 1400933 | A | 19750723 | | | | 197530 | |
| US 3904787 | A | 19750909 | | | | 197538 | |
| DE 2242728 | B | 19770217 | | | | 197708 | |

Priority Applications (No Type Date): DE 2242728 A 19720831

Abstract (Basic): DE 2242728 A
The process comprises adding an organohalosilane (I) to the silicate aq. pptn. suspension, with intensive stirring, and tempering the prodt. after filtering, washing and drying. The prodt. can be used to improve the flow behaviour of powders and as active filler, e.g., for light-coloured rubber and plastics prodts. Its organophilic and **hydrophobic** props. are retained almost indefinitely. (I) consists of mono-, di- and/or tri-halosilanes, esp. a mixt. of ca. 70% MeSiCl2 and 30% MeSiCl3.
Title Terms: **HYDROPHOBIC**; GROUP; IV; METAL; TREAT; SUSPENSION; ORGANO

20may02 11:00:11 User259284 Session D1791.1

SYSTEM:OS - DIALOG OneSearch
File 34:SciSearch(R) Cited Ref Sci 1990-2002/May W3
(c) 2002 Inst for Sci Info
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 1998 Inst for Sci Info

| Set | Items | Description |
|---|---|---|
| S1 | 2 | CR='GENTLE TE, 1992, V274, P115, SUBMICRON MULTIPH' |
| S2 | 15 | CR='GENTLE TE, 1992, P295, SILANES OTHER COUPLI':CR='GENTLE TE, 1992, V6, P307, J ADHES SCI TECHNOL' |
| S3 | 13 | S2 NOT S1 |
| S4 | 348 | CR=DRAGE JS? |
| S5 | 603 | CR=WU HJ? |
| S6 | 0 | 4AND5 |
| S7 | 951 | S4:S5 |
| S8 | 0 | S7 AND NANO |
| S9 | 0 | S7 AND NANOPOR? |
| S10 | 11 | S7 AND (SILOXANE? OR POLYSILOXANE?) |
| S11 | 7 | S7 AND HYDROPHOB? |
| S12 | 7 | S11 NOT S10 |

1/3,AB,K/1 (Item 1 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci


05508005 Genuine Article#: WD303 Number of References: 475
Title: The sol-gel route to inorganic-organic composites (ABSTRACT AVAILABLE)
Author(s): Mark JE (REPRINT)
Corporate Source: UNIV CINCINNATI,DEPT CHEM/CINCINNATI//OH/45221 (REPRINT); UNIV CINCINNATI,POLYMER RES CTR/CINCINNATI//OH/45221
Journal: HETEROGENEOUS CHEMISTRY REVIEWS, 1996, V3, N4 (DEC), P307-326
ISSN: 1068-6983 Publication date: 19961200
Publisher: JOHN WILEY & SONS LTD, BAFFINS LANE CHICHESTER, W SUSSEX, ENGLAND PO19 1UD
Language: English Document Type: REVIEW
Abstract: The present review attempts to give a broad overview of work on inorganic-organic composites prepared by the sol-gel approach currently being used asa more chemically based route to ceramics, In much of this work, an in situ generated ceramic material is dispersed as a reinforcing phase in a polymeric host matrix, at various levels of dispersion and with a variety of overall morphologies. In other applications, it is the continuous phase with the organic phase distributed in it, One of the major applications in this case is the improvement of mechanical properties of the ceramic and, for this purpose, the organic phase is again polymeric, Other guest molecules are becoming increasingly investigated, however, including dyes, biologically active species, and catalysts, Although this is primarily an educational-tutorial review, an unusually extensive list of references to the literature has been included in the hope of making this review useful, as well, to those already familiar with this research area.

Cited References:
...**GENTLE TE**, 1992, V274, P115, SUBMICRON MULTIPHASE

5/19/02 09/841,453

1/3,AB,K/2 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci


05463207 Genuine Article#: WA584 Number of References: 380
Title: CERAMIC-REINFORCED POLYMERS AND POLYMER-MODIFIED CERAMICS (Abstract Available)
Author(s): MARK JE
Corporate Source: UNIV CINCINNATI,DEPT CHEM/CINCINNATI//OH/45221; UNIV CINCINNATI,POLYMER RES CTR/CINCINNATI//OH/45221
Journal: POLYMER ENGINEERING AND SCIENCE, 1996, V36, N24 (DEC), P2905-2920
ISSN: 0032-3888
Language: ENGLISH Document Type: ARTICLE
Abstract: The composites discussed in this review are prepared using techniques similar to those used in the new sol-gel approach to ceramics. Organometallics such as silicates, titanates, and aluminates are hydrolyzed in the presence of polymer chains (for example polysiloxanes and polyimides) that typically contain hydroxyl or amino groups. The functional groups are used to bond the polymer chains onto the silica, titania, or alumina being formed in the hydrolysis, thus forming organic-inorganic composites. When the polymer chains are present in excess, they constitute the continuous phase, with the ceramic-type material appearing as reinforcing particles. When present in smaller amounts, the polymer is dispersed in the continuous ceramic phase, to give a polymer-modified ceramic. Under some conditions, bicontinuous systems are obtained. The composites thus prepared are characterized by electron microscopy, Xray, and neutron scattering intensities, density determinations, and stress-strain and impact-strength measurements.

Cited References:
...**GENTLE TE**, 1992, V274, P115, SUBMICRON MULTIPHASE
? s s2 not s1

10/3,AB,K/2 (Item 2 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci


09023098 Genuine Article#: 357VU Number of References: 47
Title: Polymer derived engineering ceramics (ABSTRACT AVAILABLE)
Author(s): Greil P (REPRINT)
Corporate Source: UNIV ERLANGEN NURNBERG,DEPT MAT SCI GLASS & CERAM, MARTENSSTR 5/D-91058 ERLANGEN//GERMANY/ (REPRINT)
Journal: ADVANCED ENGINEERING MATERIALS, 2000, V2, N6 (JUN), P339-348
ISSN: 1438-1656 Publication date: 20000600
Publisher: WILEY-V C H VERLAG GMBH, MUHLENSTRASSE 33-34, D-13187 BERLIN, GERMANY
Language: English Document Type: ARTICLE
Abstract: Engineering ceramics in the system Si-O-C-N-B manufactured from preceramic silicon containing polymers gain in significance with increasing availability of advanced precursor materials such as poly(carbosilane), -(silazane), -(**siloxane**) or -(borosilazane). While high temperature resistant Si-C and Si-N ceramic fibers are already used to reinforce ceramic matrix composites (CMC) in air- and spacecraft structures, novel products such as coatings, tapes, foams, and complex shaped components for medium and low temperature applications In the fields of energy, environmental, transportation, and communication technologies become more important in the future. Preceramic polymers offer the possibility of using versatile plastic shaping technologies as well as advanced laminated object manufacturing techniques. Properties can be varied in a wide range by tailoring the molecular structure and composition of the precursor polymer and by loading the polymer with intert or reactive filler powders. Partial conversion of the of the organic polymer into organic/inorganic hybrid materials yields novel materials which exhibit properties between polymers and ceramics.

Cited References:
...**WU HJ**, 1992, V25, P1840, MACROMOLECULES

10/3,AB,K/3 (Item 3 from file: 34)
DIALOG(R)File 34:SciSearch(R) Cited Ref Sci


08742189 Genuine Article#: 324LB Number of References: 15
Title: Influence of organic components and the parameters of plastic forming on essential properties of polymer-derived ceramic composites (ABSTRACT AVAILABLE)
Author(s): Schubert R (REPRINT) ; Kastner F
Corporate Source: HERMSDORFER INST TECH KERAM HITK EV,MARIE CURIE STR 17/D-07629 HERMSDORF//GERMANY/ (REPRINT)
Journal: CFI-CERAMIC FORUM INTERNATIONAL, 2000, V77, N5 (MAY), P32-40
ISSN: 0173-9913 Publication date: 20000500
Publisher: GOLLER VERLAG GMBH, ASCHMATTSTRASSE 8, D-76532 BADEN BADEN, GERMANY
Language: English Document Type: ARTICLE
Abstract: With the use of organic, thermoplastic or liquid ceramic precursors on a **polysiloxane** basis, novel ceramic or ceramic-like composites can be processed with plastic forming methods, such as injection moulding or extrusion for example, without the addition of large quantities of wax-like plasticizing agents which would subsequently have to be removed. On the basis of cross-linkable **polysiloxanes** filled in a ceramic process, the thermoplastic flowability was examined conditional on the type of filling and the addition of plasticizers. Optimized material systems were processed by means of injection moulding or extrusion, the morphological and mechanical properties of the composites and their silicon resin matrix were characterized. At thermal loads above 300 degrees C, an increase in the porosity and a decrease in the mechanical strength of the polymer-derived ceramic composites result, caused by the pyrolytic decomposition of the organic constituents in the **polysiloxane** matrix. With the addition of glass-forming components such as boric acid or sodium polyphospate, a decrease in the porosity and an increase in the strength of the composites could be achieved, which can be attributed to the development of flowable glassy phases in the composite matrix during thermal treatment between 300 and 900 degrees C.

...**WU HJ**, 1996, V435, P431, MATER RES SOC SYMP P